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ANNUAL SUMMARY

OF

BIRTHS, DEATHS, AND CAUSES OF DEATH

IN

LONDON

AND OTHER GREAT TOWNS,

1893.

PUBLISHED BY THE AUTHORITY OF THE REGISTRAR GENERAL OF BIRTHS, DEATHS, AND MARRIAGES IN ENGLAND.

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1894.

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REGISTRATION LONDON.*

AREA.—The Area of Registration London is 77,389 acres or 121 square miles including 2717 acres of tidal water; this is equal to 31,319 hectares, or 313 square kilometres. The length of the streets and roads, as returned in 1882, was more than 1600 miles; and, from that date to the end of 1893, a total length of 181 miles of new streets had been sanctioned. The Area of London being 121 square miles is equal to a square of 11 miles to the side.

ELEVATION.—The population of London resides at a mean elevation of 60 feet (18·2 metres) above approximate mean water at Liverpool; the elevation varying from 1 foot (0·3 metre) in Plumstead Marshes, to 441 feet (134·4 metres) at Hampstead, above approximate mean water at Liverpool.

HOUSES.—At the Census in 1891 there were within this area 544,977 inhabited houses, containing an average of 7·7 persons to a house, a slightly lower proportion than in 1871 and 1881.

ANNUAL RATABLE VALUE. — The Annual Ratable Value of Property within Registration London in 1891, as assessed in accordance with the Valuation (Metropolis) Act, 1869, was 31,819,412*l.*† (For Annual Ratable Value of Greater London in 1891, see Table 7.)

DENSITY (1893).—143 persons to a hectare; 57·7 to an acre; 36,909 to a square mile. (In these calculations no account is taken of tidal water.)

ANNUAL RATE OF INCREASE OF POPULATION PER CENT.	1861–71	1·50
	1871–81	1·61
	1881–91	1·04

1893.

POPULATION (Estimated to the middle of the year.)	Males	2,035,494	4,306,411
	Females	2,270,917	PERSONS.
MARRIAGES			36,971
PERSONS MARRIED			73,942
ANNUAL RATE OF PERSONS MARRIED PER 1000 OF THE POPULATION			17·2
BIRTHS	Males	67,685	132,975
	Females	65,290	PERSONS.
ANNUAL RATE OF BIRTHS PER 1000 OF THE POPULATION			31·0
DEATHS	Males	46,853	91,536
	Females	44,683	PERSONS.
ANNUAL RATE OF MORTALITY PER 1000	Males	23·0	21·3
	Females	19·7	PERSONS.
EXCESS OF REGISTERED BIRTHS OVER DEATHS			41,439
ESTIMATED INCREASE OF POPULATION			42,545

* Registration London is co-extensive with the Administrative County of London except that the hamlet of Penge is excluded from Registration London, although forming part of the County of London.

† This information is derived from a return of the Gross and Ratable Value of Property in the Metropolis issued by the London County Council.

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ANNUAL SUMMARY.

LONDON

AND OTHER GREAT TOWNS,

1893.

General Register Office, Somerset House,
4th April 1894.

The Great Towns.

The thirty-three great towns of England and Wales, to which this summary relates, contained a population estimated at 10,327,846 in the middle of the year 1893. The births registered among this population in the course of the 52 weeks ending December 30th, 1893, numbered 328,352, and were in the proportion of 31·9 in a calendar year per 1000 persons living. The deaths registered in the 52 weeks were 222,178, giving an annual rate of 21·6 per 1000 population.

The general death-rates in 1893, calculated without reference to age or sex, varied considerably in the thirty-three great towns, ranging from 16·3 per 1000 in Croydon to 27·3 in Liverpool (Table 2, page xvi).

It has been pointed out, however, in previous Annual Summaries that, in consequence of the great differences between one town and another with regard to the age and sex constitution of their respective populations, these *recorded* rates require correction before they can justly be used for purposes of comparison. In Table A. of the present Summary, factors are given by the use of which this correction can be made for each town with approximate accuracy. Applying these factors we have the corrected rates, which are given in the fourth column of the appended table. In the fifth column the death-rate for all England and Wales has been taken as 1,000, and the corrected rate in each town has been reduced to a figure comparable with that standard. The fifth column may be read as follows:—After making approximate correction for differences of age and sex constitution, the same number of lives that in the year 1893 gave 1000 deaths in England and Wales, gave 1216 in the thirty-three great English towns collectively, 886 in Croydon, 963 in Norwich, &c. &c., 1472 in Manchester, 1512 in Preston, and 1582 in Liverpool.

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TABLE A.—RECORDED and CORRECTED DEATH-RATES per 1000 Persons living in 33 Great Towns in 1893.

Towns, in the order of their Corrected Death-rates.	Standard Death-rate.*	Factor for Correction for Sex and Age Distribution.†	Recorded Death-rate, 1893.	Corrected Death-rate, 1893.‡	Comparative Mortality Figure, 1893.§
Cols.	1.	2.	3.	4.	5.
England and Wales -	19·15	1·0000	19·17	19·17	1000
England and Wales, less the 33 Towns - -	19·45	0·9845	17·90	17·62	919
33 Towns - -	17·71	1·0813	21·57	23·32	1216
Croydon - - -	18·37	1·0424	16·30	16·99	886
Norwich - - -	19·99	0·9579	19·28	18·47	963
Brighton - - -	18·94	1·0110	18·42	18·62	971
Portsmouth - -	18·73	1·0224	18·22	18·63	972
Halifax - - -	17·20	1·1133	17·36	19·33	1008
Bristol - - -	18·33	1·0447	18·93	19·78	1032
Nottingham - -	17·81	1·0752	18·46	19·85	1035
Huddersfield - -	16·47	1·1627	17·20	20·00	1043
Derby - - -	17·36	1·1031	18·24	20·12	1050
West Ham - -	17·75	1·0788	18·91	20·40	1064
Plymouth - - -	19·70	0·9720	21·25	20·66	1078
Gateshead - - -	17·83	1·0740	19·30	20·73	1081
Swansea - - -	17·53	1·0924	19·62	21·43	1118
Leicester - -	17·64	1·0855	20·01	21·72	1133
Cardiff - - -	17·16	1·1159	19·68	21·96	1146
Birkenhead - - -	17·42	1·0993	20·54	22·58	1178
London - - -	17·97	1·0656	21·31	22·71	1185
Newcastle-on-Tyne -	17·58	1·0892	21·00	22·87	1193
Hull - - -	18·23	1·0504	21·84	22·94	1197
Sunderland - -	18·25	1·0493	22·53	23·64	1233
Bradford - - -	16·73	1·1446	20·96	23·99	1251
Oldham - - -	16·72	1·1453	21·01	24·06	1255
Birmingham - -	17·33	1·1050	21·98	24·29	1267
Wolverhampton - -	18·30	1·0464	23·27	24·35	1270
Leeds - - -	17·28	1·1082	22·29	24·70	1288
Sheffield - - -	17·22	1·1120	22·31	24·81	1294
Burnley - - -	16·67	1·1487	21·88	25·13	1311
Blackburn - - -	17·05	1·1231	23·28	26·15	1364
Salford - - -	17·03	1·1244	24·08	27·08	1413
Bolton - - -	16·90	1·1331	24·12	27·33	1426
Manchester - -	16·90	1·1331	24·90	28·21	1472
Preston - - -	17·42	1·0993	26·37	28·99	1512
Liverpool - - -	17·26	1·1094	27·34	30·33	1582

* The Standard Death-rate signifies the death-rate at all ages calculated on the hypothesis that the rates at each of twelve age-periods in each town were the same as in England and Wales during the ten years 1881–90, the Death-rate at all ages in England and Wales during that period having been 19·15 per 1,000.

† The Factor for Correction is the figure by which the Recorded Death-rate should be multiplied in order to correct for variations of sex and age distribution.

‡ The Corrected Death-rate is the Recorded Death-rate multiplied by the Factor for Correction.

§ The Comparative Mortality Figure represents the Corrected Death-rate in each town compared with the Recorded Death-rate at all ages in England and Wales in 1893, taken as 1000.

Particulars of the mortality in 1893 in the thirty-three great towns are given in Tables 1 to 4. Of these towns, five, viz., West Ham, Croydon, Swansea, Burnley, and Gateshead, were added to the list in 1892; and, as the several medical officers of health have favoured the Registrar-General with the figures for earlier years, it has been possible to compare the mortality of each town in 1893 with its average mortality in the preceding ten years. This has been done in Table 3.

In the thirty-three towns collectively the death-rates from *measles*, *scarlet fever*, and *whooping-cough* were below the average, while those from *small-pox*, *fever*, *diarrhœa*, and *diphtheria* were in excess, the mortality from diphtheria being more than double the average.

There were 732 deaths in the thirty-three towns from *small-pox*, of which 206 occurred in London or in the Metropolitan Asylum Hospitals outside the Metropolis, 55 in the neighbouring municipality of West Ham, 115 in Bradford, 71 in Birmingham, 65 in Oldham, 48 in Manchester, and 35 in Halifax, the remaining 137 being distributed over 17 other towns. The highest death-rates from this disease were in Bradford, Oldham, Halifax, and West Ham.

The mortality from *measles* was 0·44 per 1000 of the population, the average rate in the preceding ten years having been 0·63. The rates ranged from 0·05 in Halifax, 0·10 in Birmingham, and 0·11 each in Brighton, Bristol, and Nottingham, to 1·08 in Newcastle, 1·16 in Blackburn, 1·42 in Bolton, and 1·63 in Preston.

The mortality from *scarlet fever*, which had averaged 0·33 per 1000 in the preceding ten years, declined to 0·29, the rates in the several towns ranging from 0·03 in Halifax, 0·04 in Blackburn, and 0·08 in Leeds, to 0·43 in Leicester, 0·45 in Liverpool, and 0·55 in Burnley.

The mortality from *diphtheria* was 0·43 per 1000, and, as has already been stated, was double the average (0·21) in the preceding ten years. The lowest rates in the several towns were 0·02 in Blackburn, 0·03 in Huddersfield, 0·05 in Swansea, and 0·06 in Wolverhampton; the rates in the other towns rising to 0·42 in West Ham, 0·68 in Cardiff, 0·76 in London, and 0·78 in Croydon. During the preceding year the mortality from this disease had been excessive in London, West Ham, and Croydon, and, to a less extent, in Cardiff.

The mortality from *whooping-cough*, which had averaged 0·59 per 1000 in the ten years 1883–92, declined to 0·48 in 1893; but, while the rates were not above 0·05 in Wolverhampton and 0·13 in Huddersfield, they rose in the other towns to 0·61 in Leicester, 0·64 in Norwich, 0·66 in Birmingham and in Bolton 0·67 in Birkenhead, and 0·68 in West Ham.

The mortality from *continued fevers*, which had been no higher than 0·15 per 1000 in the previous year, rose to 0·24, exceeding the average in the previous ten years by 0·01. The rate varied in the several towns from 0·11 in Croydon and in Bristol, and 0·12 in Plymouth and in Huddersfield, to 0·46 in Preston, 0·48 in Hull, 0·49 in Salford, 0·53 in Liverpool, and 0·98 in Sunderland; in Salford and Sunderland the rates from *fever* had also been high during the previous year.

The mortality from *diarrhœa* was 1·23 per 1000, being 0·37 above the average in the preceding ten years. The highest rates from this disease were 2·09 in Burnley, 2·11 in Salford, 2·19 in Leicester, 2·29 in Blackburn, 2·36 in Hull, and 3·11 in Preston.

The highest aggregate rates from the seven zymotic diseases above enumerated were 4·08 in Blackburn, 4·14 in Salford and in Hull, 4·65 in Bolton, and 6·01 in Preston.

The infantile mortality, or proportion of deaths under one year of age to 1000 registered births, was 181, the proportions ranging from 141 in Bristol and in Huddersfield, 155 in Croydon, and 156 in Derby, to 220 in Leicester, 223 in Burnley, 241 in Blackburn, and 269 in Preston.

LONDON.

Marriages.

The marriages in London in the year 1893 numbered 36,971, and the proportion of persons married was 17·2 per 1000 of the estimated population. The proportion had increased from 16·9 per 1000 in 1887 and again in 1888, to 17·7 in 1891, after which it declined to 17·4 in 1892, and to 17·2 last year.

Births.

The number of births registered in the 52 weeks was 132,975, being in the proportion of 31·0 annually per 1000 of the estimated population. This rate is identical with that of the year 1892, which was the lowest rate recorded in London in any previous year, with the single exception of 1890 when the rate was 30·7. The natural increment of population, by excess of births over deaths, was 41,429, the average increment in the preceding five years having been 47,668.

Deaths.

The deaths registered in the 52 weeks numbered 91,536, being in the proportion of 21·3 annually per 1000 population. This rate was 1·2 per 1,000 in excess of the average rate in the previous five years, having been raised considerably by the mortality from diphtheria and influenza.

The 91,536 deaths included 1912 of Londoners taking place in certain metropolitan institutions outside the limits of Registration London, and also 1476 deaths of strangers who had been admitted into the London Hospitals and Infirmaries from districts outside these boundaries. But it is impossible to ascertain how many persons died in private houses in London who had not previously resided in the Metropolis. By excluding the deaths of known strangers occurring in metropolitan institutions the death-rate is reduced to 21·0 per 1000. (Tables F. and G.)

The following table shows, in a summary form, the amount of life saved and the amount lost in the year 1893, as compared with the preceding decennium, under each of the more important headings in the list of causes :—

TABLE B.—DIMINUTION OR EXCESS of DEATHS in 1893, compared with the Average Annual Deaths in 1883–92, corrected for increase of Population.

CAUSE OF DEATH.	Diminution in 1893.	Excess in 1893.
Small-pox	97	—
Measles	1,053	—
Scarlet Fever	—	449
Typhus	16	—
Influenza	—	970
Whooping-cough	443	—
Diphtheria	—	1,985
Simple Fever	36	—
Enteric Fever	—	10
Diarrhœal Diseases	—	391
Cancer	—	374
Phthisis and other Tubercular Diseases	917	—
Premature Birth	—	365
Diseases of Nervous System	498	—
Diseases of Circulatory System	—	403
Diseases of Respiratory System	—	662
Diseases of Urinary System	—	170
Childbirth and Puerperal Fever	—	173
Accident	—	249
Homicide	17	—
Suicide	—	40
All other Causes	—	825
	3,077	7,066
Balance of Diminution or Excess	—	3,989

The net loss during the year amounted to 3989 lives; that is to say, if the death-rate in 1893 had not exceeded the average rate in the preceding decennium, the deaths of 3989 fewer persons would have been registered in London.

Among the causes of death contributing to this excess were again diphtheria, cancer, premature birth, and diseases of the circulatory and urinary systems, which diseases have, for several successive years, shown an increased mortality. Besides these, in 1893 there was a considerable excess under the heads of scarlet fever, influenza, diarrhœal and respiratory diseases; childbirth, puerperal fever, and accident also showing increased mortality. The excess of mortality from diphtheria

was no less than 1985, the total deaths from this disease having been 3265. The deaths referred to influenza during the year 1893 showed an excess of 970 as compared with the corrected average.

The deaths attributed directly to influenza numbered 1526 in the year 1893, having been 652 in 1890, 2336 in 1891, and 2264 in 1892; while the average in the ten preceding years 1880–89 had not exceeded 6·3. As in the preceding three years, the deaths from pneumonia were again largely in excess of the average, and it is probable that to this cause have been assigned many deaths which were really due to influenza. The deaths from influenza in the first quarter of the year numbered 356, in the second quarter 354, in the third quarter 84, and in the fourth quarter 732, of which 546 were registered in the last four weeks of the year.

The deaths from *small-pox*, which had averaged not more than 6 in the five years 1887–91, and had numbered 41 in 1892, further increased to 206 in 1893; of these, 62 were stated to have been deaths of vaccinated, and 79 of unvaccinated, persons, while, concerning the remaining 65 persons who died from small-pox, no information was obtainable as to their condition with regard to vaccination.

The deaths from *measles* amounted to 1661, or less than half the number registered in 1892. The death-rate from this cause in 1893 was 0·39 per 1000 population, the rate in the preceding decennium having been 0·63. The deaths were fewest in the first quarter of the year.

Under the head of *scarlet fever* 1596 deaths were registered, corresponding to an annual rate of 0·37 per 1000. The mortality was higher than that in any year since 1883, and was 0·10 per 1000 in excess of the mean rate in the decennium 1883–92. Of the 1596 deaths, 921, or 58 per cent., occurred in public hospitals or infirmaries.

The deaths attributed to *diphtheria* numbered 3,265, and were in the proportion of 0·76 per 1000 living, this being by far the highest rate yet recorded, and exceeding the average in the previous decennium by no less than 0·46 per 1000. The mortality from this disease, which for several years has shown a tendency to increase, had been in the last four years respectively 0·33, 0·34, 0·46, and 0·76 per 1000. The deaths from diphtheria and croup, taken together, amounted in 1893 to 3482, while the average number in the preceding decennium, corrected for increase of population, had not exceeded 1861. Distribution of the London hospital deaths to their appropriate sanitary areas shows the East group of these areas to have suffered the highest diphtheria mortality, viz., 1·00 per 1000, the Central group coming next with a rate of 0·82, then the North and South groups with a rate of 0·73 in each case, and lastly the West group with a rate of 0·52.

The following Table shows the number of deaths from *diphtheria* for each of the last seven years in the several sanitary areas of London, after distribution of the deaths in public institutions: —

TABLE C.—DEATHS from DIPHTHERIA in the METROPOLITAN SANITARY AREAS in the SEVEN YEARS 1887 to 1893, after Distribution of deaths occurring in Hospitals.

Sanitary Area.	Enumerated Population 1891.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
Paddington	117,846	29	76	42	40	24	28	70
Kensington	166,308	40	91	111	34	28	34	83
Hammersmith	97,239	44	38	45	49	73	73	53
Fulham	91,639	19	10	12	22	19	31	64
Chelsea	96,253	19	14	24	56	16	39	52
St. George Hanover Square	78,364	13	46	30	13	20	26	34
Westminster	55,774	25	37	28	9	11	44	14
St. James Westminster	24,995	3	5	2	3	7	6	14
Marylebone	142,404	14	23	34	27	26	48	94
Hampstead	68,416	13	16	8	21	13	27	38
Pancras	234,379	62	72	62	132	71	107	201
Islington	319,143	46	50	63	81	158	150	200
Hackney	229,542	40	76	97	67	79	131	206
St. Giles	39,782	23	11	17	10	12	21	22
St. Martin-in-the-Fields	14,616	5	3	2	1	4	12	8
Strand	25,217	10	3	8	4	5	8	22
Holborn	33,264	9	5	17	18	9	17	22
Clerkenwell	66,216	17	26	24	19	28	28	76
St. Luke	42,440	12	10	13	16	12	14	46
London City	38,320	5	11	12	11	13	24	11
Shoreditch	124,009	27	32	69	58	65	44	137
Bethnal Green	129,132	27	52	102	116	61	117	136
Whitechapel	74,462	6	24	34	51	54	59	61
St. George-in-the-East	45,795	15	15	43	30	19	33	62
Limehouse	57,376	14	25	47	28	16	25	61
Mile End Old Town	107,592	22	20	53	44	37	81	80
Poplar	166,748	30	42	64	70	55	78	168
St. Saviour Southwark	27,177	8	13	12	5	11	6	17
St. George Southwark	59,712	12	23	20	14	18	26	45
Newington	115,804	27	18	55	32	44	38	93
St. Olave Southwark	12,723	2	4	1	4	5	3	7
Bermondsey	84,682	16	14	23	19	16	20	80
Rotherhithe	39,255	6	8	16	8	4	11	31
Lambeth	275,203	105	107	156	76	78	130	184
Battersea	150,558	51	27	33	40	70	54	167
Wandsworth	156,942		65	44	22	36	65	114
Camberwell	235,344	65	64	70	51	47	78	130
Greenwich	165,413	37	34	30	47	46	52	147
Lewisham (excluding Penge)	72,272	11	31	5	15	8	20	53
Woolwich	40,848	3	3	6	5	2	4	8
Plumstead	88,539	19	24	18	19	9	44	85

Note.—The population and deaths in places such as the Charterhouse, Gray's Inn, &c., which are not comprised in any of the above sanitary areas (note †, Table 3, p.16, Vol. II., Census Report, 1891) are nevertheless included in the totals relating to the areas with which these places are connected for registration purposes.

The deaths ascribed to *whooping-cough* numbered 2330, and were in the proportion of 0·54 per 1000 living, the average proportion in the preceding decennium having been 0·65. There was, thus, a saving of 443 lives under this heading.

To *enteric fever* were attributed 693 deaths, to *simple or ill-defined forms of continued fever* 21, and to *typhus* only 5. Thus, from continued fevers in the aggregate there were 719 deaths, corresponding to an annual rate of 0·17 per 1000, against an average of 0·18 in the preceding decennium.

The deaths referred to *diarrhœa* numbered 3446, and were in the proportion of 0·80 per 1000 population, exceeding the proportion in the previous year by 0·20, and the mean proportion in the decennium 1883–92 by 0·07, per 1000. This excess in the mortality was doubtless due to the prolonged period of warm and dry weather which characterised the summer and autumn of 1893.

One death was referred to *hydrophobia*, the average annual deaths in the preceding decennium having been seven. *Glanders* was the assigned cause of three deaths.

The deaths from *violence* were 3425, exceeding the previous decennial average, corrected for increase of population, by 270. The greater part of this excess was under *accident*, to which were attributed 2918 deaths, against an annual average of 2669. The deaths from *suicide* were almost identical with those in the previous year, and exceeded the corrected average by 40; while the 58 deaths from *homicide* were 17 below the average.

Of the 2918 deaths from accident, 304 were caused by vehicles and horses in the streets, a number exceeding the corrected average by about 40. But it is probable that the 304 deaths thus specifically returned are far from representing the entire number caused in the streets by vehicles and horses.* The following Table gives the numbers of deaths caused by the various descriptions of vehicles, the largest number appearing, as usual, under the heading "van, waggon, dray":

TABLE D.

Year.	Description of Vehicle, &c.								Total.
	Horse, &c.	Carriage.	Omnibus.	Tram-car.	Cab.	Cart.	Van, waggon, dray.	Others, and not described.	
1873	13	10	12	17	28	56	79	2	217
1874	28	11	17	14	33	36	67	5	211
1875	11	15	18	9	39	55	82	2	231
1876	13	4	17	12	24	56	84	7	217
1877	16	13	13	4	26	56	97	2	227
1878	17	12	14	10	34	63	84	3	237
1879	16	13	17	18	36	57	74	5	236
1880	12	11	20	17	39	43	76	2	220
1881	13	14	21	23	31	58	88	4	252
1882	12	15	19	23	37	60	100	5	271
1883	6	12	16	25	57	45	57	4	222
1884	12	11	33	18	57	51	74	9	265
1885	12	20	14	11	55	55	89	10	266
1886	10	7	21	9	39	49	111	5	251
1887	13	7	18	19	51	49	85	9	251
1888	5	15	25	9	41	47	91	4	237
1889	15	10	29	12	52	40	83	13	254
1890	3	11	22	18	43	44	109	20	270
1891	9	10	18	12	35	38	111	11	244
1892	17	15	26	11	44	47	101	8	269
1893	21	7	28	16	42	48	109	33	304

* Many deaths thus caused are registered under such indefinite headings as "fractures," &c.

Of the 2918 deaths attributed to *accident* or *negligence*, 556 were of infants under one year of age who had been suffocated in bed, the numbers so returned in the preceding three years having been 636, 608, and 605. Nearly half the deaths from *homicide* were those of infants under one year of age.

Deaths in Workhouses, Hospitals, and Public Lunatic and Imbecile Institutions.—Of the 91,536 deaths registered in the 52 weeks of last year, 24,598, or 26·9 per cent. occurred in public institutions. The per-centages in the several classes of institutions were as follow :—

13·1 per cent. in workhouses and workhouse infirmaries.
2·4 „ „ in Metropolitan Asylum Hospitals.
9·6 „ „ in other hospitals.
1·8 „ „ in public lunatic or imbecile asylums.

Thus about one in every 8 deaths occurred in a workhouse or workhouse infirmary, one in 42 in a Metropolitan Asylum Hospital, one in 10 in some other hospital, and one in 56 in a public lunatic or imbecile asylum.

Table E.

	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.
Deaths in Public Institutions -	18,630	18,109	18,255	18,858	18,869	21,881	23,052	22,260	24,598
Metropolitan Asylum Board Hospitals (in and out of London) -	1,248	248	624	683	729	1,019	973	1,650	2,163
Other Hospitals - -	6,592	6,769	6,972	7,093	7,054	7,717	8,008	7,686	8,794
Lunatic and Imbecile Asylums* - - -	1,278	1,384	1,374	1,479	1,583	1,882	1,598	1,686	1,621
Workhouses and Workhouse Infirmaries† -	9,512	9,708	9,285	9,603	9,503	11,263	12,473	11,238	12,020
Proportion of persons in receipt of Poor Law Relief, per 1000 population - In-door	13·6	13·6	13·9	14·1	14·0	13·7	13·5	13·7	14·2
Out-door	9·1	9·6	9·9	10·0	9·0	8·5	8·0	7·8	8·2

* Including the City of London, London County, and Metropolitan Lunatic and Imbecile Asylums situated outside Registration London.
† Including the Strand Union Workhouse at Edmonton, and the Holborn Union Workhouse at Mitcham.

It was remarked in the last Annual Summary that the deaths in workhouses in each of the years 1890, 1891, and 1892 were far in excess of those in any of the five preceding years ; this excess has been continued in 1893. The increase in the proportion of deaths in workhouses does not, however, imply an increase in the number of persons receiving in-door relief ; for the mean proportion of in-door paupers in the five years 1885–89 was 13·9 per 1000 population, whereas in the succeeding four years 1890–93 it was only 13·8 per 1000. The excess of mortality in workhouses during 1893, as in recent previous years, was due to influenza. In recent years there has been an increase of deaths in the Metropolitan Asylum Hospitals, the numbers in the last three years having been respectively 973, 1650, and 2163. Of the 2163 deaths in these institutions in 1893, 897, or about the same number as in the preceding year, were of scarlet fever patients ; while 898 were of persons under treatment for diphtheria, the latter being 288 in excess of the number in 1892.

Mortality in different parts of London.—The distribution of the registered mortality in London is seriously affected by the hospitals and other public institutions. In order, therefore, to give the means for a fair comparison between one

district, or one group of districts, and another, the following Table has been constructed, in which the deaths in public institutions have been distributed to the sanitary areas from which the deceased had been admitted, and certain other corrections have been made as explained in the footnote to the Table.

TABLE F.—DEATHS BELONGING to the SEVERAL SANITARY AREAS of REGISTRATION LONDON, registered in the 52 WEEKS of 1893.

SANITARY AREAS.	Deaths.	Deaths from Principal Zymotic Diseases.									Deaths of Infants under 1 Year of Age.	Deaths under 1 Year to 1000 Births registered.
		Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and Ill-defined Fever.	Diarrhœa.		
REGISTRATION LONDON	90,060	186	1,658	1,587	3,196	2,327	5	675	21	3,436	21,746	164
WEST.												
Paddington	2,141	4	30	33	70	60	-	21	-	57	451	150
Kensington	2,942	10	21	52	83	65	-	17	-	100	620	169
Hammersmith	1,872	3	4	36	53	50	-	15	2	83	474	160
Fulham	2,074	2	12	33	64	82	-	17	-	132	653	176
Chelsea	1,955	1	23	32	52	68	-	17	2	73	452	158
St. George Hanover Square	1,228	3	2	25	34	14	-	12	2	26	199	133
Westminster	1,290	-	5	25	14	15	-	7	1	43	255	188
St. James Westminster	474	1	4	2	14	8	-	6	1	7	77	146
NORTH.												
Marylebone	3,192	5	32	68	94	78	-	20	1	84	660	151
Hampstead	948	2	1	20	38	6	-	8	-	22	154	102
Pancras	5,138	9	154	100	201	106	-	27	-	164	1,209	172
Islington	6,405	2	129	94	200	197	1	47	1	259	1,603	164
Hackney	4,532	4	57	74	205	165	-	53	1	164	1,049	152
CENTRAL.												
St. Giles	925	4	6	14	22	18	-	6	-	23	143	131
St. Martin-in-the-Fields	298	2	1	2	8	2	-	1	-	5	42	188
Strand	713	1	2	19	22	11	-	1	-	12	130	219
Holborn	886	1	18	12	22	16	-	13	-	27	185	214
Clerkenwell	1,745	-	79	30	76	51	-	10	-	73	425	202
St. Luke	1,282	1	58	28	46	40	-	12	-	47	308	174
London City	843	3	11	8	11	4	-	-	1	10	83	132
EAST.												
Shoreditch	3,153	3	129	39	137	80	-	16	1	161	791	178
Bethnal Green	3,257	7	83	71	136	60	-	25	-	145	844	177
Whitechapel	1,916	5	37	32	61	26	-	8	-	66	520	163
St. George-in-the-East	1,403	1	32	14	62	23	-	4	-	85	410	209
Limehouse	1,613	8	21	35	61	64	1	18	-	61	401	205
Mile End Old Town	2,430	8	39	40	80	44	-	29	-	121	619	149
Poplar	3,905	12	32	105	168	74	1	62	-	185	1,003	169
SOUTH.												
St. Saviour Southwark	649	-	6	18	17	20	-	3	-	18	120	154
St. George Southwark	1,700	7	35	42	45	74	-	13	-	70	447	206
Newington	2,856	6	34	51	93	109	-	13	-	126	763	176
St. Olave Southwark	312	1	1	6	7	3	-	2	-	9	58	141
Bermondsey	2,004	4	36	30	80	44	1	8	-	70	537	168
Rotherhithe	927	13	10	16	31	33	-	8	-	25	247	165
Lambeth	5,749	5	118	69	184	151	1	36	4	197	1,371	149
Battersea	2,980	12	93	40	167	114	-	22	-	122	883	169
Wandsworth	2,617	1	36	53	114	81	-	18	1	119	647	142
Camberwell	4,724	11	83	73	130	109	-	27	-	186	1,200	161
Greenwich	3,510	13	103	71	147	100	-	28	1	143	887	165
Lewisham (excluding Penge)	1,133	5	19	11	53	8	-	9	1	29	244	128
Woolwich	842	4	14	16	8	20	-	5	1	33	208	160
Plumstead	1,547	2	53	48	85	32	-	11	-	54	394	137

In the above Table all deaths in Hospitals and in other Public Institutions within Registration London, as also 1912 that occurred outside that area in the Strand Union Workhouse at Edmonton, the Holborn Union Workhouse at Mitcham, the City of London Lunatic Asylum at Stone, and the Metropolitan Hospitals and Asylums, have been distributed to the sanitary areas from which the deceased inmates were admitted. On the other hand, the deaths of 1476 non-residents who died in Public Institutions have been excluded from the Table.

Taking the figures in this Table as a basis, and assuming that the population of each of the five great groups of districts has increased or decreased since 1891 at the same ratio as between the censuses of 1881 and 1891, the following results are obtained.

TABLE G.—LONDON.—BIRTH and DEATH-RATES in GROUPS of SANITARY AREAS during the 52 weeks of 1893.

GROUPS OF SANITARY AREAS.	PER 1000 PERSONS LIVING.												
	BIRTHS.	Deaths from											Deaths under 1 Year to 1000 Births registered.
		ALL CAUSES.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and Ill-Defined Fever.	Diarrhœa.	
REGISTRATION LONDON - -	31·0	21·0	3·05	0·04	0·39	0·37	0·74	0·54	0·00	0·16	0·00	0·81	164
West Group - -	26·4	18·7	2·35	0·03	0·14	0·32	0·52	0·49	–	0·15	0·01	0·69	162
North „ - -	29·3	20·0	2·86	0·02	0·37	0·35	0·73	0·55	0·00	0·15	0·00	0·69	158
Central „ - -	29·0	26·6	3·55	0·05	0·70	0·45	0·82	0·57	–	0·17	0·00	0·79	181
East „ - -	37·3	25·1	4·00	0·06	0·53	0·48	1·00	0·53	0·00	0·23	0·00	1·17	175
South „ - -	31·7	19·9	2·99	0·05	0·40	0·34	0·73	0·57	0·00	0·13	0·01	0·76	159

In this Table, 0·00 indicates that the deaths were too few to give a rate of 0·005; when *no death* occurred, – is inserted.

Note.—The deaths in Metropolitan Hospitals and in other Metropolitan Institutions, whether situated within Registration London or outside its limits, have been distributed to the Sanitary Areas to which the deceased persons properly belonged. (See note to Table F.)

Uncertified Causes of Death.—Of the 91,536 deaths registered in London, 794, or 0·9 per cent., were not certified either by a registered medical practitioner or by a coroner (Tables 1 and 2); this proportion was identical with that in 1892, which was lower than the proportion recorded in any previous year. In the thirty-two large provincial towns in the aggregate the proportion of uncertified deaths was 2·4 per cent.; in Croydon there was again no uncertified death, and the proportion was only 0·5 in Plymouth, and 0·8 each in Portsmouth, Derby, and Bolton; while in the other towns the proportions ranged upwards to 4·3 in Halifax, 4·5 in West Ham, and 4·9 in Birmingham. Birmingham also had shown an excessive proportion in 1892, while Halifax had been thus distinguished in several preceding years.

GREATER LONDON.—The estimated population of Greater London, which is co-extensive with the Metropolitan and City Police Districts, was 5,849,707 in the middle of the year 1893, including 4,306,411 in Inner or Registration London, and 1,543,296 in the Outer Ring. The mortality among the population of the entire area was 19·7 per 1000, the rates in the preceding three years having been 20·1, 19·8, and 19·3, and having averaged 19·7 per 1000. In the central part, or Registration London, the mortality was 21·3, while in the Outer Ring it was no higher than 15·4. The death-rate from the principal zymotic diseases (Table 8) was 2·86 in Greater London, the rates in Inner London and in the Outer Ring being 3·08 and 2·25 respectively; compared with the average rates in the preceding three years, these rates showed an increase of 16 per cent. in Greater London, of 18 per cent. in Inner London, and of 11 per cent. in the Outer Ring. Infant mortality, by which should be understood the proportion of deaths under one year of age to registered births, was at the rate of 158 per 1000 in Greater London, against 157, 147, and 150 per 1000 in the preceding three years. The proportions in Inner London and in the Outer Ring differed considerably, being 164 and 140 per 1000 respectively.

Edinburgh, Glasgow, and Dublin.—The death-rate in Edinburgh in 1893 was 19·8 per 1000 population, against 21·3 in London. In Glasgow the rate was 23·4, while in Dublin it was as high as 27·0. In Glasgow the mortality from measles was 1·3, from whooping-cough 1·0, and from diarrhœa 0·9; while in Dublin the rate from "fever" reached 0·9, and that from diarrhœa 1·3, per 1000.

Colonial and Foreign Cities.—From Weekly and other Returns with which the Registrar-General is favoured by the Authorities of 38 of the principal Foreign and Colonial cities, with an aggregate population of more than twenty-three millions, it is found that the deaths last year were equal to a rate of 24·4 per 1000 living.

In thirty-three European, American, and Australian cities, with an aggregate population of nearly twenty millions, the rate was 23·2 per 1000. In these thirty-three cities the lowest death-rates were 15·7 in Sydney, 16·3 in Brisbane, 17·5 in Christiania, 17·9 in San Francisco, 18·6 in Amsterdam, and 18·7 in Cincinnati; the rates in the other cities ranging upwards to 27·9 in Trieste, 28·1 in New Orleans, 29·1 in Breslau, 30·6 in St. Petersburg, and 35·9 in Moscow. In Paris the rate was 21·8, in Berlin 21·0, and in Vienna 24·0, against 21·3 in London. *Small-pox* caused 256 deaths in Paris, 203 in Trieste, 141 in Prague, 119 in Moscow, 112 in Rotterdam, and 100 in New York. The mortality from *measles* was high in Sydney, Brisbane, Vienna, Venice, Brussels, Dresden, Munich, and Rome; from *scarlet fever* in Stockholm, Moscow, St. Petersburg, and Boston; from *diphtheria* in Moscow, Stockholm, Milan, Copenhagen, and Paris, and in nearly all the German, Austrian, and American cities from which returns are received; and from "*fever*" in Milan, Prague, Moscow, St. Petersburg, in most of the American cities, and in Rome (where more than half the deaths from "fever" were caused by *malarial fever*). The mortality from *diarrhœal diseases* (including *cholera*) was excessive in all the thirty-three towns, except San Francisco, Prague, Trieste, and the Dutch towns.

Among the Indian cities the highest death-rate was in Madras, viz., 40·9, the rates in Bombay and Calcutta being 28·1 and 25·9 respectively. *Small-pox* caused 203 deaths in Bombay, 20 in Madras, and 15 in Calcutta; and *measles* caused 876 deaths in Madras and 287 in Bombay. The mortality from "*fever*" was again excessive in all these towns.

In Cairo and Alexandria the death-rates were respectively 50·9 and 36·3 per 1000, these high rates being mainly attributable to excessive mortality from *diarrhœal diseases*, the rate from which was 15·5 per 1000 in Cairo and 9·2 in Alexandria.

TABLE 1.—33 Towns.—Population; Births, Deaths, and Meteorology, in the 52 Weeks of 1893.

CITIES AND BOROUGHS.	Population, Estimated to the middle of 1893.*	Persons to an Acre.	Births.	Deaths.	The Deaths registered in the 52 Weeks include: Deaths of: Infants under 1 Year of Age.	Deaths of: Persons aged 60 Years and upwards.	Deaths from: Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Violence.	Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death.	Mean Temperature.	Rain-fall (Inches).	CITIES AND BOROUGHS.
Cols.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	Cols.
33 Towns -	10,327,846	34·4	328352	222178	59570	49281	32797	732	4559	3015	4423	4977	2493	12598	7539	14846	42562	3951	49°4	21·89	- 33 Towns.
London† - - -	4,306,411	57·7	132975	91536	21845	21815	13223	206	1661	1596	3265	2330	719	3446	3425	7432	24598	794	51·1	20·13	London.†
West Ham - -	227,405	48·3	8083	4288	1373	777	768	55	36	80	95	154	68	280	119	160	376	192	–	–	West Ham.
Croydon - -	108,997	12·1	2852	1772	441	525	240	1	20	11	85	27	12	84	54	133	246	–	–	–	Croydon.
Brighton - -	117,833	46·6	2981	2165	503	644	217	–	13	12	33	56	15	88	62	96	380	58	50·9	22·69	Brighton.
Portsmouth - -	167,277	38·7	4709	3039	772	785	469	–	113	33	29	37	52	205	88	189	407	23	50·6	23·61	Portsmouth.
Plymouth - -	86,781	56·4	2590	1839	439	530	240	–	85	22	14	46	10	63	52	129	175	9	–	–	Plymouth.
Bristol - - -	225,028	50·4	6814	4249	963	1289	371	17	25	35	49	77	25	143	142	294	855	70	–	–	Bristol.
Cardiff - - -	142,435	23·5	5121	2796	918	431	469	–	100	39	98	40	27	165	114	231	332	28	–	–	Cardiff.
Swansea - - -	93,816	18·4	3285	1836	557	371	172	–	17	33	5	30	19	68	55	98	131	36	–	–	Swansea.
Wolverhampton -	84,298	23·9	2902	1956	605	463	239	1	21	26	5	4	28	154	69	138	366	20	47·7	19·49	Wolverhampton.
Birmingham - -	487,891	38·4	15916	10693	3152	2342	1481	71	50	68	63	320	98	811	314	287	1912	529	–	–	Birmingham.
Norwich - -	104,184	13·8	3210	2003	626	599	317	–	61	20	23	66	37	110	42	137	178	22	48·6	19·61	Norwich.
Leicester - -	184,547	21·5	6006	3683	1319	775	727	15	52	80	20	113	46	401	96	210	450	137	–	–	Leicester.
Nottingham - -	220,551	20·1	6642	4061	1128	1090	577	4	25	81	15	59	69	324	164	240	604	68	49·2	20·18	Nottingham.
Derby - -	97,341	28·2	3123	1771	486	424	201	7	17	14	7	44	22	90	57	146	243	15	–	–	Derby.
Birkenhead - -	103,817	29·8	3431	2127	674	465	292	1	15	12	16	69	27	152	68	168	253	24	–	–	Birkenhead.
Liverpool - -	510,514	97·9	18322	13919	3863	2267	1987	9	273	231	63	279	269	863	751	959	2720	515	50·1	24·30	Liverpool.
Bolton - - -	117,278	49·8	3874	2821	770	576	544	7	166	34	12	77	36	212	64	171	212	23	–	–	Bolton.
Manchester - -	515,598	34·9	17268	12801	3498	2393	1911	48	296	138	165	241	129	894	434	921	2451	170	–	–	Manchester.
Salford - - -	203,431	39·3	7047	4886	1483	890	839	22	92	41	58	99	100	427	145	259	692	161	–	–	Salford.
Oldham - - -	136,469	28·9	3896	2860	727	555	338	65	29	16	18	55	26	129	75	175	288	31	–	–	Oldham.
Burnley - -	93,462	23·8	3161	2039	705	323	354	6	27	51	14	34	28	194	50	74	120	29	–	–	Burnley.
Blackburn - -	124,005	17·8	3822	2879	923	573	504	7	144	5	2	33	30	283	65	105	275	99	–	–	Blackburn.
Preston - - -	110,225	27·0	3855	2899	1037	510	661	–	179	27	14	47	51	343	54	76	202	111	–	–	Preston.
Huddersfield -	97,549	8·2	2313	1673	326	450	121	–	23	25	3	13	12	45	35	52	136	49	–	–	Huddersfield.
Halifax - -	91,918	10·8	2253	1591	390	450	157	35	5	3	23	32	13	46	38	58	183	68	47·5	25·09	Halifax.
Bradford - -	221,611	20·5	6132	4632	1208	1052	757	115	69	70	23	110	49	321	99	223	539	68	49·2	22·67	Bradford.
Leeds - - -	382,093	17·7	12349	8493	2540	1684	1322	20	341	31	62	166	110	592	218	565	855	82	49·5	22·94	Leeds.
Sheffield - -	333,922	17·0	11591	7428	2217	1500	1172	5	176	90	61	128	90	622	176	279	836	261	–	–	Sheffield.
Hull - - -	208,709	25·4	7125	4545	1470	980	862	8	128	33	22	80	99	492	127	201	555	152	48·7	20·12	Hull.
Sunderland - -	134,515	46·9	4771	3022	896	616	451	5	17	26	11	24	131	237	90	218	342	28	–	–	Sunderland.
Gateshead - -	90,938	29·0	3309	1750	563	329	314	2	71	9	19	53	21	139	51	116	107	43	–	–	Gateshead.
Newcastle - -	196,997	36·7	6624	4126	1153	808	500	–	212	23	31	34	25	175	146	306	543	36	–	–	Newcastle.

* By "estimated" population is meant the number of persons who would be living if the mean rate of increase between 1881 and 1891 had been maintained since the latter date.

† For the purposes of these Tables, London includes the Strand Union Workhouse at Edmonton, the Holborn Union Workhouse at Mitcham, the City of London Asylum at Stone, and the Metropolitan Hospitals and Asylums situated outside Registration London. Several of the provincial towns have been similarly corrected by the addition of deaths occurring in Public Institutions situated beyond their limits.

TABLE 2.—33 Towns.—Birth-, and Death-rates, and Analysis of Mortality, in the 52 Weeks of 1893.

In this Table, 0·00 indicates that the deaths were too few to give a rate of 0·005; when *no death* occurred, — is inserted.

CITIES AND BOROUGHS.	ANNUAL RATES PER 1000 PERSONS LIVING.														DEATHS under 1 Year to 1000 Births.	ANNUAL RATE of MORTALITY per 1000 living.		PERCENTAGE to Total Deaths.			CITIES AND BOROUGHS.
	BIRTHS in 52 Weeks ending 30th Dec. 1893.	Total Deaths. 52 or 53 Weeks ending				Deaths from										Aged 1 to 60 Years.	Aged 60 Years and upwards.	Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death.	
		3rd Jan. 1891.	2nd Jan. 1892.	31st Dec. 1892.	30th Dec 1893.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Violence.							
Cols.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	Cols.
33 TOWNS - -	31·9	22·4	22·2	20·7	21·6	3·18	0·07	0·44	0·29	0·43	0·48	0·24	1·23	0·73	181	12·0	79·6	6·7	19·2	1·8	- .33 TOWNS.
LONDON* - -	31·0	21·5	21·4	20·6	21·3	3·08	0·05	0·39	0·37	0·76	0·54	0·17	0·80	0·80	164	12·3	79·3	8·1	26·9	0·9	LONDON.*
WEST HAM - -	35·6	19·5	17·8	18·6	18·9	3·39	0·24	0·16	0·35	0·42	0·68	0·30	1·24	0·52	170	10·2	76·6	3·7	8·8	4·5	WEST HAM.
CROYDON - -	26·2	16·3	14·5	15·8	16·3	2·21	0·01	0·18	0·10	0·78	0·25	0·11	0·78	0·50	155	8·2	67·1	7·5	13·9	—	CROYDON.
BRIGHTON - -	25·4	19·1	18·2	19·2	18·4	1·85	—	0·11	0·10	0·28	0·48	0·13	0·75	0·53	169	9·7	63·4	4·4	17·6	2·7	BRIGHTON.
PORTSMOUTH - -	28·2	17·9	19·0	18·5	18·2	2·81	—	0·68	0·20	0·17	0·22	0·31	1·23	0·53	164	9·9	64·5	6·2	13·4	0·8	PORTSMOUTH.
PLYMOUTH - -	29·9	21·1	22·5	18·8	21·2	2·77	—	0·98	0·25	0·16	0·53	0·12	0·73	0·60	169	11·4	66·6	7·0	9·5	0·5	PLYMOUTH.
BRISTOL - - -	30·4	20·2	20·9	19·5	18·9	1·65	0·08	0·11	0·16	0·22	0·34	0·11	0·63	0·63	141	9·9	79·7	6·9	20·1	1·6	BRISTOL.
CARDIFF - - -	36·1	19·5	22·1	18·8	19·7	3·30	—	0·70	0·27	0·68	0·28	0·19	1·18	0·80	179	11·0	67·6	8·3	11·9	1·0	CARDIFF.
SWANSEA - - -	35·1	22·3	22·0	20·4	19·6	1·84	—	0·18	0·35	0·05	0·32	0·20	0·74	0·59	170	10·6	74·7	5·3	7·1	2·0	SWANSEA.
WOLVERHAMPTON -	34·5	22·2	24·2	21·5	23·3	2·84	0·01	0·25	0·31	0·06	0·05	0·33	1·83	0·82	208	11·7	81·2	7·1	18·7	1·0	WOLVERHAMPTON.
BIRMINGHAM -	32·7	22·4	22·2	20·4	22·0	3·04	0·15	0·10	0·14	0·13	0·66	0·20	1·66	0·65	198	11·6	86·2	2·7	17·9	4·9	BIRMINGHAM.
NORWICH - -	30·9	20·1	19·3	20·0	19·3	3·05	—	0·59	0·19	0·22	0·64	0·36	1·05	0·40	195	8·5	63·9	6·8	8·9	1·1	NORWICH.
LEICESTER - -	32·6	19·7	21·7	18·2	20·0	3·95	0·08	0·28	0·43	0·11	0·61	0·25	2·19	0·52	220	9·4	72·5	5·7	12·2	3·7	LEICESTER.
NOTTINGHAM -	30·2	19·2	19·9	18·7	18·5	2·62	0·02	0·11	0·37	0·07	0·27	0·31	1·47	0·75	170	9·2	75·0	5·9	14·9	1·7	NOTTINGHAM.
DERBY - - -	32·2	20·1	19·1	18·3	18·2	2·07	0·07	0·18	0·14	0·07	0·45	0·23	0·93	0·59	156	9·7	76·9	8·2	13·7	0·8	DERBY.
BIRKENHEAD - -	33·1	21·1	20·9	19·6	20·5	2·82	0·01	0·14	0·12	0·15	0·67	0·26	1·47	0·66	196	10·4	82·3	7·9	11·9	1·1	BIRKENHEAD.
LIVERPOOL - -	36·0	27·8	27·0	24·7	27·3	3·90	0·02	0·54	0·45	0·12	0·55	0·53	1·69	1·47	211	16·6	83·8	6·9	19·5	3·7	LIVERPOOL.
BOLTON - - -	33·1	26·1	21·9	22·8	24·1	4·65	0·06	1·42	0·29	0·10	0·66	0·31	1·81	0·55	199	13·7	97·6	6·1	7·5	0·8	BOLTON.
MANCHESTER - -	33·6	29·7	26·5	25·8	24·9	3·72	0·09	0·58	0·27	0·32	0·47	0·25	1·74	0·84	203	14·6	92·7	7·2	19·1	1·3	MANCHESTER.
SALFORD - - -	34·7	27·6	26·0	24·6	24·1	4·14	0·11	0·45	0·20	0·29	0·49	0·49	2·11	0·71	210	13·4	92·5	5·3	14·2	3·3	SALFORD.
OLDHAM - - -	28·6	24·0	25·7	22·0	21·0	2·48	0·48	0·21	0·12	0·13	0·40	0·19	0·95	0·55	187	12·6	78·7	6·1	10·1	1·1	OLDHAM.
BURNLEY - - -	33·9	23·0	21·6	20·4	21·9	3·80	0·06	0·29	0·55	0·15	0·36	0·30	2·09	0·54	223	11·7	76·7	3·6	5·9	1·4	BURNLEY.
BLACKBURN - -	30·9	24·4	25·8	21·7	23·3	4·08	0·06	1·16	0·04	0·02	0·27	0·24	2·29	0·53	241	12·1	89·9	3·6	9·6	3·4	BLACKBURN.
PRESTON - - -	35·1	27·0	27·3	24·1	26·4	6·01	—	1·63	0·25	0·13	0·43	0·46	3·11	0·49	269	13·4	81·0	2·6	7·0	3·8	PRESTON.
HUDDERSFIELD -	23·8	20·0	23·0	18·1	17·2	1·24	—	0·24	0·26	0·03	0·13	0·12	0·46	0·36	141	10·0	75·4	3·1	8·1	2·9	HUDDERSFIELD.
HALIFAX - - -	24·6	22·4	22·8	19·5	17·4	1·71	0·38	0·05	0·03	0·25	0·35	0·14	0·51	0·41	173	9·0	73·0	3·6	11·5	4·3	HALIFAX.
BRADFORD - -	27·7	22·8	22·2	18·0	21·0	3·43	0·52	0·31	0·32	0·10	0·50	0·22	1·46	0·45	197	11·7	84·0	4·8	11·6	1·5	BRADFORD.
LEEDS - - -	32·4	22·7	22·9	19·8	22·3	3·47	0·05	0·89	0·08	0·16	0·44	0·29	1·56	0·57	206	12·2	81·7	6·7	10·1	1·0	LEEDS.
SHEFFIELD - -	34·8	25·8	23·9	20·8	22·3	3·52	0·02	0·53	0·27	0·18	0·38	0·27	1·87	0·53	191	12·1	87·0	3·8	11·3	3·5	SHEFFIELD.
HULL - - -	34·2	20·9	21·0	19·6	21·8	4·14	0·04	0·61	0·16	0·11	0·38	0·48	2·36	0·61	206	11·1	77·9	4·4	12·2	3·3	HULL.
SUNDERLAND - -	35·6	23·9	25·0	20·9	22·5	3·36	0·04	0·13	0·19	0·08	0·18	0·98	1·76	0·67	188	12·3	80·1	7·2	11·3	0·9	SUNDERLAND.
GATESHEAD - -	36·5	21·3	23·1	18·9	19·3	3·46	0·02	0·78	0·10	0·21	0·58	0·23	1·54	0·56	170	10·3	71·4	6·6	6·1	2·5	GATESHEAD.
NEWCASTLE - -	33·7*	23·1	23·8	19·7	21·0	2·55	—	1·08	0·12	0·16	0·17	0·13	0·89	0·74	174	12·0	79·6	7 4	13·2	0·9	NEWCASTLE.

* See note (†) to Table 1.

TABLE 3.—**33 Towns.—Death-rates** per 1,000 living from **All Causes,** and from the **Principal Zymotic Diseases,** and **Infant Mortality,** in the Ten Years **1883–92,** and in **1893.**

In this Table 0·00 indicates that the deaths were too few to give a rate of 0·005; when *no death* occurred, – is inserted.

Cities and Boroughs.	All Causes.		Small-pox.		Measles.		Scarlet Fever.		Diphtheria.		Whooping-cough.		Fever.		Diarrhœa.		Deaths under One Year to 1000 Births.		Cities and Boroughs.
	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	Ten years 1883–92.	1893.	
33 Towns -	21·3	21·6	0·06	0·07	0·63	0·44	0·33	0·29	0·21	0·43	0·59	0·48	0·23	0·24	0·86	1·23	163	181	**33** Towns.
London* - -	20·4	21·3	0·07	0·05	0·63	0·39	0·27	0·37	0·30	0·76	0·65	0·54	0·18	0·17	0·72	0·80	153	164	London.*
West Ham - -	19·4	18·9	0·45	0·24	0·62	0·16	0·30	0·35	0·25	0·42	0·75	0·68	0·23	0·30	0·79	1·24	152	170	West Ham.
Croydon - -	15·0	16·3	0·06	0·01	0·40	0·18	0·09	0·10	0·23	0·78	0·44	0·25	0·11	0·11	0·52	0·78	117	155	Croydon.
Brighton - -	18·1	18·4	0·00	–	0·39	0·11	0·11	0·10	0·15	0·28	0·41	0·48	0·14	0·13	0·68	0·75	147	169	Brighton.
Portsmouth -	18·6	18·2	0·01	–	0·47	0·68	0·10	0·20	0·24	0·17	0·36	0·22	0·43	0·31	0·78	1·23	142	164	Portsmouth.
Plymouth - -	21·5	21·2	0·00	–	0·46	0·98	0·49	0·25	0·16	0·16	0·48	0·53	0·28	0·12	0·64	0·73	161	169	Plymouth.
Bristol - -	19·5	18·9	0·03	0·08	0·54	0·11	0·27	0·16	0·10	0·22	0·49	0·34	0·14	0·11	0·49	0·63	144	141	Bristol.
Cardiff - -	21·0	19·7	0·03	–	0·64	0·70	0·37	0·27	0·20	0·68	0·53	0·28	0·31	0·19	0·88	1·18	165	179	Cardiff.
Swansea - -	20·6	19·6	0·00	–	0·74	0·18	0·60	0·35	0·05	0·05	0·52	0·32	0·35	0·20	0·41	0·74	153	170	Swansea.
Wolverhampton	21·9	23·3	0·02	0·01	0·51	0·25	0·23	0·31	0·09	0·06	0·45	0·05	0·17	0·33	1·05	1·83	171	208	Wolverhampton.
Birmingham -	20·9	22·0	0·05	0·15	0·56	0·10	0·26	0·14	0·12	0·13	0·58	0·66	0·15	0·20	1·11	1·66	169	198	Birmingham.
Norwich - -	19·9	19·3	–	–	0·35	0·59	0·11	0·19	0·18	0·22	0·43	0·64	0·31	0·36	0·95	1·05	168	195	Norwich.
Leicester - -	20·3	20·0	0·00	0·08	0·43	0·28	0·29	0·43	0·08	0·11	0·42	0·61	0·20	0·25	1·56	2·19	204	220	Leicester.
Nottingham -	20·7	18·5	0·01	0·02	0·48	0·11	0·16	0·37	0·11	0·07	0·53	0·27	0·32	0·31	1·03	1·47	170	170	Nottingham.
Derby - - -	18·6	18·2	0·01	0·07	0·42	0·18	0·14	0·14	0·10	0·07	0·43	0·45	0·24	0·23	0·62	0·93	148	156	Derby.
Birkenhead -	20·2	20·5	0·02	0·01	0·57	0·14	0·31	0·12	0·10	0·15	0·43	0·67	0·31	0·26	0·66	1·47	154	196	Birkenhead.
Liverpool - -	26·0	27·3	0·04	0·02	0·95	0·54	0·52	0·45	0·16	0·12	0·69	0·55	0·39	0·53	1·02	1·69	185	211	Liverpool.
Bolton - -	22·7	24·1	0·00	0·06	0·69	1·42	0·28	0·29	0·10	0·10	0·61	0·66	0·26	0·31	1·24	1·81	175	199	Bolton.
Manchester -	26·5	24·9	0·02	0·09	0·83	0·58	0·47	0·27	0·20	0·32	0·66	0·47	0·28	0·25	1·02	1·74	182	203	Manchester.
Salford - -	24·9	24·1	0·00	0·11	0·88	0·45	0·59	0·20	0·33	0·29	0·73	0·49	0·43	0·49	1·41	2·11	187	210	Salford.
Oldham - -	23·9	21·0	0·02	0·48	0·82	0·21	0·34	0·12	0·16	0·13	0·53	0·40	0·19	0·19	0·60	0·95	175	187	Oldham.
Burnley - -	21·8	21·9	0·00	0·06	0·73	0·29	0·39	0·55	0·09	0·15	0·35	0·36	0·31	0·30	1·48	2·09	213	223	Burnley.
Blackburn -	24·6	23·8	0·02	0·06	0·83	1·16	0·59	0·04	0·01	0·02	0·54	0·27	0·39	0·24	1·16	2·29	192	241	Blackburn.
Preston - -	26·7	26·4	0·05	–	0·71	1·63	0·45	0·25	0·17	0·13	0·62	0·43	0·44	0·46	2·17	3·11	223	269	Preston.
Huddersfield -	20·6	17·2	0·00	–	0·61	0·24	0·22	0·26	0·12	0·03	0·45	0·13	0·14	0·12	0·36	0·46	167	141	Huddersfield.
Halifax - -	21·2	17·4	0·02	0·38	0·47	0·05	0·26	0·03	0·10	0·25	0·27	0·35	0·21	0·14	0·28	0·51	161	173	Halifax.
Bradford - -	20·3	21·0	0·00	0·52	0·48	0·31	0·30	0·32	0·05	0·10	0·45	0·50	0·18	0·22	0·79	1·46	166	197	Bradford.
Leeds - - -	21·9	22·3	0·01	0·05	0·47	0·89	0·64	0·08	0·08	0·16	0·46	0·44	0·28	0·29	1·09	1·56	173	206	Leeds.
Sheffield - -	22·2	22·3	0·24	0·02	0·52	0·53	0·71	0·27	0·10	0·18	0·57	0·38	0·23	0·27	1·08	1·87	173	191	Sheffield.
Hull - - -	20·3	21·8	0·03	0·04	0·38	0·61	0·22	0·16	0·08	0·11	0·49	0·38	0·24	0·48	1·02	2·36	162	206	Hull.
Sunderland -	22·6	22·5	0·13	0·04	0·80	0·13	0·33	0·19	0·10	0·08	0·45	0·18	0·34	0·98	1·00	1·76	158	188	Sunderland.
Gateshead -	21·2	19·3	0·10	0·02	0·51	0·78	0·47	0·10	0·07	0·21	0·57	0·58	0·28	0·23	1·08	1·54	162	170	Gateshead.
Newcastle - -	22·4	21·0	0·05	–	0·68	1·08	0·35	0·12	0·17	0·16	0·53	0·17	0·26	0·13	0·69	0·89	163	174	Newcastle.

* *See* note (†) to Table 1.

TABLE 4.—33 Towns.—Mean Temperature at Greenwich, and

Number of Week.	Week ending	Mean Temperature at Greenwich. Fahrenheit.	Mean Temperature at Greenwich. Centigrade.	Annual Rate of: Thirty-three Towns.	London.*	West Ham.	Croydon.	Brighton.	Portsmouth.	Plymouth.	Bristol.	Cardiff.	Swansea.	Wolverhampton.	Birmingham.	Norwich.	Leicester.
		°	°														
	YEAR (52 weeks)	51·1	10·61	21·6	21·3	18·9	16·3	18·4	18·2	21·2	18·9	19·7	19·6	23·3	22·0	19·3	20·0
	March Qr (13 weeks)	40·9	4·94	22·0	22·1	18·9	19·3	20·9	20·9	22·5	20·1	20·7	18·5	20·6	22·2	23·3	18·6
	June „ (13 weeks)	57·0	13·89	19·8	19·5	14·8	13·6	16·4	15·5	22·0	17·1	19·4	20·5	19·9	19·7	15·6	18·9
	Sept. „ (13 weeks)	61·9	16·61	21·8	20·5	20·8	16·7	18·2	18·8	17·8	16·1	19·1	20·5	26·3	22·2	19·6	22·1
	Dec. „ (13 weeks)	44·6	7·00	22·6	23·2	21·2	15·6	18·1	17·6	22·6	22·4	19·7	19·0	26·4	23·8	18·5	20·5
1	Jan. 7	25·5	−3·61	29·1	30·4	26·4	18·2	31·9	22·4	29·4	20·8	21·6	23·9	27·2	31·2	24·5	26·0
2	„ 14	35·1	1·72	28·3	30·3	21·1	28·7	27·9	23·7	24·6	27·8	24·9	24·4	33·4	29·7	25·5	27·1
3	„ 21	35·0	1·68	24·9	25·4	25·5	21·5	23·9	24·9	26·4	23·6	20·9	21·1	22·9	26·8	27·0	22·9
4	„ 28	41·2	5·11	22·2	22·2	17·9	20·6	21·7	23·1	23·4	21·1	22·7	19·4	14·2	23·0	25·5	19·2
5	Feb. 4	44·5	6·94	20·2	20·3	17·0	20·6	19·0	16·8	16·8	22·5	17·9	18·3	16·1	18·6	23·5	13·3
6	„ 11	40·5	4·72	19·9	19·1	17·4	20·6	22·1	19·3	18·6	19·2	15·4	21·7	14·9	20·9	21·5	18·9
7	„ 18	43·7	6·50	19·2	18·0	20·6	16·7	19·5	20·6	25·2	16·2	21·6	17·2	19·8	19·0	14·5	17·5
8	„ 25	39·3	4·06	19·7	19·7	17·0	24·9	18·6	24·9	16·8	16·7	20·5	15·5	17·9	19·1	22·5	16·4
9	March 4	43·8	6·56	20·8	20·8	16·3	15·3	19·9	21·5	27·0	16·4	23·8	16·7	17·3	18·0	28·5	12·4
10	„ 11	46·7	8·17	19·6	19·1	15·6	18·2	18·1	15·3	27·6	19·2	16·5	13·9	20·4	20·9	24·5	18·6
11	„ 18	45·5	7·50	19·9	19·1	15·8	14·4	16·4	16·8	16·2	17·8	18·7	18·9	18·6	18·0	25·0	15·0
12	„ 25	43·9	6·61	20·9	20·7	16·3	15·8	15·9	20·9	16·2	17·8	22·3	16·1	17·9	21·7	22·0	15·8
13	April 1	49·3	9·61	21·2	21·0	18·8	15·3	17·3	21·8	24·0	22·2	22·0	12·8	26·6	22·0	18·5	18·6
14	April 8	48·4	9·11	20·9	20·4	16·7	11·5	20·8	19·3	21·6	20·6	17·6	17·2	19·8	22·0	21·0	18·1
15	„ 15	45·3	7·39	20·8	20·4	13·3	12·9	20·4	17·1	19·8	19·5	16·1	21·1	20·4	19·7	15·0	19·5
16	„ 22	55·4	13·00	21·4	21·0	12·4	13·9	18·1	21·2	22·2	25·7	21·2	22·8	22·3	22·0	16·0	17·5
17	„ 29	56·0	13·33	19·7	19·0	13·8	12·9	14·6	16·8	19·2	13·7	22·7	20·0	20·4	20·4	19·5	14·7
18	May 6	55·0	12·78	19·8	19·1	15·1	15·3	20·4	15·6	24·0	20·4	14·3	15·5	20·4	21·5	17·0	14·1
19	„ 13	57·8	14·33	18·6	17·7	11·9	10·5	19·5	14·0	27·0	14·8	24·5	21·7	25·4	18·7	11·5	19·5
20	„ 20	59·3	15·17	18·9	18·2	14·0	13·9	16·8	13·4	16·8	15·7	19·4	16·7	17·9	19·9	16·0	17·2
21	„ 27	58·7	14·83	17·5	17·7	12·8	12·0	9·3	14·3	17·4	17·1	16·5	23·3	13·6	15·9	12·5	18·6
22	June 3	55·7	13·17	17·9	17·6	12·4	10·5	13·3	13·1	14·4	13·0	15·0	20·0	22·9	18·2	14·0	19·8
23	„ 10	60·7	15·94	18·2	18·1	16·3	11·5	18·1	13·1	22·2	14·8	13·6	13·9	16·7	18·7	14·0	19·8
24	„ 17	65·9	18·83	19·4	19·1	15·8	16·3	13·7	10·3	27·6	13·0	26·0	32·2	23·5	15·5	17·0	18·1
25	„ 24	61·6	16·44	22·1	22·6	14·4	18·2	14·6	17·5	24·6	19·9	20·1	21·1	16·7	21·4	11·5	24·0
26	July 1	62·3	16·83	22·7	22·2	23·2	17·2	14·2	15·6	28·8	14·6	24·5	21·7	17·9	22·3	18·0	24·9
27	July 8	68·6	20·33	23·8	22·4	22·9	16·7	19·9	19·0	15·0	18·1	28·2	28·3	29·1	26·2	13·5	31·4
28	„ 15	60·5	15·83	24·8	22·9	28·2	17·2	14·2	21·5	16·2	13·4	20·9	23·3	34·7	28·1	25·5	26·6
29	„ 22	61·8	16·56	25·1	22·5	24·1	20·6	18·1	24·3	23·4	12·7	20·9	18·9	31·6	26·5	18·0	30·5
30	„ 29	62·4	16·89	22·6	20·9	20·9	20·6	15·5	24·9	15·0	14·4	16·9	20·5	29·7	25·2	20·5	24·3
31	August 5	60·2	15·67	21·9	20·8	20·6	14·8	15·9	19·6	25·2	15·1	18·3	19·4	26·6	22·2	26·5	21·2
32	„ 12	67·8	19·89	20·9	19·6	16·1	12·9	24·3	19·3	18·6	17·1	17·2	18·9	29·7	20·3	15·5	17·5
33	„ 19	73·6	23·11	22·8	22·5	25·2	24·4	23·5	19·3	17·4	15·3	18·7	20·0	24·8	22·0	21·5	24·6
34	„ 26	63·0	17·22	21·6	20·8	20·6	13·4	20·8	15·9	15·0	16·7	17·2	21·1	26·6	21·8	19·5	20·3
35	Sept. 2	59·4	15·22	20·6	19·0	21·3	19·1	19·9	15·9	16·8	17·4	18·7	16·7	27·2	20·4	15·5	17·2
36	„ 9	61·4	16·33	20·1	18·9	19·7	14·4	20·8	15·6	13·2	14·8	17·6	22·2	21·0	17·3	21·5	18·1
37	„ 16	58·1	14·50	19·8	17·5	12·2	14·8	13·7	20·3	12·0	19·2	18·3	17·8	19·8	21·7	19·5	16·4
38	„ 23	53·8	12·11	19·7	18·9	18·6	14·4	13·7	13·7	19·8	16·9	16·5	18·9	19·2	19·8	18·0	18·4
39	„ 30	54·2	12·33	20·2	20·1	19·7	14·4	15·9	15·3	24·0	17·8	18·7	20·6	21·6	16·5	20·0	20·6
40	October 7	52·7	11·50	18·5	17·9	17·4	8·1	15·9	12·8	16·8	13·4	13·9	16·7	32·2	21·3	13·5	16·4
41	„ 14	52·6	11·44	18·2	17·9	18·1	12·9	14·6	15·6	11·4	16·0	19·0	17·8	21·6	19·6	15·5	18·1
42	„ 21	55·0	12·78	18·4	18·8	17·7	12·9	13·3	14·6	15·0	16·5	13·2	17·2	25·4	17·8	14·0	17·0
43	„ 28	49·3	9·61	18·3	18·0	16·5	10·5	12·4	14·3	13·2	15·5	19·8	11·1	22·9	21·2	11·0	13·6
44	Nov. 4	44·9	7·17	20·2	20·5	19·7	9·6	15·5	14·6	15·0	14·6	16 1	16·1	26·6	22·7	21·5	15·0
45	„ 11	40·3	4·61	21·5	21,4	23·2	13·4	19·0	18·4	11·4	19·9	16·5	16·7	28·5	27·1	24·0	17·2
46	„ 18	41·1	5·06	24·0	24·4	22·0	11·0	17·7	17·1	21·6	20·6	23·4	18·9	29·7	31·4	18·5	17·2
47	„ 25	39·2	4·00	26·2	26·5	26·6	19·6	21·7	17·8	21·0	20·9	24·9	16·1	33·4	30·7	25·0	23·5
48	Dec. 2	40·9	4·94	26·5	27·1	25·5	13·4	16·8	17·5	25·8	26·2	20·1	27·2	30·9	22·4	19·5	28·0
49	„ 9	40·9	4·94	28·6	31·0	26·4	23·4	21·7	24·3	30·6	32·9	22·7	17·8	19·8	26·2	18·5	31·4
50	„ 16	43·7	6·50	26·7	29·1	25·0	24·9	21·2	20·3	21·6	36·4	21·2	26·7	19·2	21·2	21·0	29·4
51	„ 23	41·7	5·39	24·7	26 3	19·3	23·0	19·0	24·6	41·5	33·6	19·8	20·7	35·3	26·8	18·0	22·6
52	„ 30	40·3	4·61	22·6	23·3	18·1	20·1	27·0	17·1	49·3	24·6	24·9	17·8	17·9	21·3	20·5	16·7

* *See* note (†) to Table 1.

Annual Rate of Mortality in each Town, in each Week of 1893.

Mortality per 1000 in																				
Nottingham.	Derby.	Birkenhead.	Liverpool.	Bolton.	Manchester.	Salford.	Oldham.	Burnley.	Blackburn.	Preston.	Huddersfield.	Halifax.	Bradford.	Leeds.	Sheffield.	Hull.	Sunderland.	Gateshead.	Newcastle.	Number of Week.
18·5	18·2	20·5	27·3	24·1	24·9	24·1	21·0	21·9	23·3	26·4	17·2	17·4	21·0	22·3	22·3	21·8	22·5	19·3	21·0	
19·1	18·2	19·7	25·8	26·4	26·0	24·2	21·2	20·2	21·7	24·0	18·3	21·3	21·3	24·3	20·8	19·9	20·1	19·7	20·1	
14·7	17·6	19·3	27·1	22·5	24·4	22·4	19·7	20·5	20·6	26·2	16·8	16·9	19·3	20·9	20·6	17·2	20·0	17·7	20·3	
18·9	17·9	19·9	28·4	24·1	25·1	25·0	20·3	24·4	28·0	33·2	16·2	16·2	22·2	24·0	25·0	26·5	27·3	20·8	21·7	
21·2	19·3	23·3	28·1	23·4	24·2	24·7	22·9	22·4	22·7	22·1	17·5	15·0	21·0	20·0	22·8	23·8	22·9	19·0	21·9	
22·0	24·1	24·1	30·7	36·5	33·5	40·5	22·9	28·4	25·6	32·6	16·6	22·1	28·5	34·7	26·4	25·0	22·1	22·9	26·5	1
23·4	23·0	20·6	31·5	36·0	32·4	32·6	19·5	24·5	26·5	31·2	21·3	23·3	22·8	30·4	22·0	24·0	22·9	22·4	20·6	2
20·6	24·6	23·1	28·8	23·6	30·2	24·4	20·6	17·3	21·0	24·1	12·8	27·2	23·3	29·6	24·8	18·5	21·7	16·1	18·5	3
20·8	18·2	19·6	28·5	22·2	28·3	25·6	22·2	20·1	18·1	17·0	18·2	18·2	20·5	23·9	19·7	19·7	19·4	21·2	18·5	4
18·0	16·6	23·6	23·1	17·8	24·1	21·5	22·9	24·5	25·6	26·5	12·3	24·4	18·6	22·4	18·7	18·5	19·0	16·1	18·3	5
16·1	16·6	20·6	22·8	21·8	24·1	17·7	20·3	16·7	22·7	23·7	15·5	18·7	25·9	20·1	21·7	18·5	21·3	17·8	20·1	6
18·2	16·1	11·0	21·5	21·3	20·1	18·2	24·8	16·2	21·4	19·9	22·4	15·9	21·9	18·6	20·1	17·7	18·6	19·5	20·9	7
18·2	16·1	17·1	22·4	28·5	21·0	17·7	20·3	22·9	22·3	19·9	13·9	21·0	21·4	19·9	18·0	18·5	19·4	20·1	19·3	8
15·4	20·9	22·6	24·4	24·9	25·6	22·8	18·7	19·0	22·3	18·4	24·6	24·4	16·9	24·7	20·5	22·7	19·0	21·8	18·5	9
22·5	15·0	16·6	22·1	25·3	22·8	21·3	18·0	11·7	14·7	24·1	17·1	19·3	19·5	22·0	20·3	19·2	15·9	17·2	21·4	10
19·4	13·9	20·6	25·2	29·3	25·5	18·2	20·3	19·5	20·6	23·7	21·9	20·4	21·6	23·1	18·4	20·7	23·3	21·2	17·5	11
15·8	11·8	18·1	27·4	26·7	25·7	26·9	19·9	15·1	22·3	21·3	20·8	19·3	17·2	25·0	21·5	19·7	17·1	20·6	21·2	12
18·0	19·3	18·1	24·0	29·8	24·4	27·7	26·0	26·8	19·3	29·3	19·2	22·1	18·8	21·3	18·7	15·5	21·0	18·9	20·4	13
18·7	10·2	21·6	26·3	29·8	25·2	22·3	25·2	27·3	13·0	29·8	16·0	17·6	22·8	24·0	20·9	15·5	19·8	17·8	18·8	14
12·8	28·4	19·1	27·1	23·1	26·0	23·8	21·0	16·2	27·3	26·0	18·2	20·4	20·0	24·6	19·5	20·2	25·2	19·5	22·5	15
17·5	17·7	18·6	28·4	23·1	25·6	23·8	26·0	22·9	25·2	28·9	16·6	17·6	18·8	23·7	21·1	15·5	17·1	22·4	23·8	16
14·7	22·5	16·6	23·3	18·7	24·6	19·0	23·3	19·0	20·6	31·7	20·3	19·9	20·9	21·8	21·4	19·5	21·3	24·6	20·4	17
16·5	13·9	15·6	23·3	25·8	27·8	20·2	19·9	29·0	15·1	26·0	17·1	14·2	20·5	21·2	23·9	15·5	19·8	20·1	21·7	18
13·9	18·2	16·6	25·6	22·7	22·0	21·5	16·4	10·0	19·8	25·1	19·8	11·9	16·2	21·8	19·1	17·5	17·8	14·9	23·3	19
14·7	16·6	16·6	27·1	24·0	22·0	22·0	21·8	18·4	21·0	21·3	22·4	16·5	17·9	21·0	21·1	15·7	19·8	18·3	19·6	20
14·4	13·4	14·1	22·7	16·9	19·4	19·2	11·5	16·7	20·2	19·9	12·8	13·0	17·6	18·6	20·5	16·5	19·4	13·8	22·5	21
12·1	16·6	16·1	24·7	19·1	21·7	22·6	19·1	24·0	17·2	17·0	17·1	19·9	15·1	17·6	20·5	16·2	14·0	20·1	19·8	22
9·7	19·3	17·6	24·7	21·3	21·0	19·0	20·3	18·4	22·3	19·4	10·7	17·6	17·9	20·1	16·7	18·5	23·3	10·9	17·7	23
12·1	17·1	22·6	28·9	20·0	25·0	23·8	19·1	22·3	21·0	25·5	18·2	17·6	19·1	15·8	18·9	20·2	19·0	14·9	14·6	24
15·8	18·2	26·1	32·9	20·5	26·6	26·9	19·9	20·1	21·9	28·9	12·8	18·7	19·8	19·9	22·8	17·0	24·8	17·2	21·4	25
17·7	16·6	30·1	37·0	27·6	29·5	26·7	12·6	21·7	23·5	41·6	16·6	15·3	24·2	21·8	21·9	15·5	18·2	16·1	17·7	26
16·5	11·8	27·1	34·9	32·0	32·1	26·1	11·8	17·8	26·9	42·1	15·0	17·0	24·9	21·6	26·2	20·7	20·2	20·1	25·7	27
20·6	19·8	28·1	34·9	31·6	31·5	34·9	16·8	21·2	31·1	51·6	12·3	12·5	21·9	28·7	30·1	24·7	22·5	20·1	22·2	28
27·4	18·2	24·6	34·9	35·1	32·6	33·6	23·7	27·3	34·1	41·6	18·2	16·5	21·4	26·2	29·7	32·0	30·3	19·5	23·0	29
19·4	11·2	21·1	31·5	24·9	27·8	25·6	24·5	31·2	34·1	40·2	12·3	15·3	22·4	22·0	22·8	26·2	25·2	23·5	22·5	30
18·4	19·8	20·1	30·8	29·3	23·8	23·3	19·9	27·9	29·9	34·1	16·6	15·9	22·6	22·4	24·7	22·7	27·9	20·6	18·3	31
17·5	20·9	18·6	25·4	23·6	23·9	28·2	22·5	18·4	29·9	34·1	15·0	19·9	19·8	22·5	27·8	23·2	25·6	18·3	19·3	32
21·5	20·9	14·1	27·1	21·8	23·2	22·3	23·3	26·2	26·9	33·1	22·4	13·6	17·6	23·6	25·8	31·0	31·0	25·2	18·3	33
18·0	17·1	15·1	23·8	20·0	22·4	25·6	22·9	25·1	33·2	25·5	18·2	18·7	26·4	24·8	28·0	27·0	27·9	16·6	22·5	34
20·1	23·0	18·1	26·6	16·9	23·2	19·2	21·0	24·0	21·9	26·0	17·1	18·2	23·8	24·6	20·9	31·5	26·0	22·4	23·0	35
17·5	20·4	20·6	23·1	19·6	23·5	20·2	21·0	21·2	29·9	22·7	16·6	13·0	23·3	22·8	22·6	30·2	30·2	21·8	21·7	36
18·7	11·2	13·1	25·8	23·1	20·8	23·2	23·3	30·1	22·3	24·1	15·0	18·2	24·7	25·7	23·3	26·0	29·8	24·6	28·6	37
17·0	13·9	18·1	25·0	17·3	18·9	21·0	17·2	21·8	26·9	30·3	20·3	17·6	18·8	24·0	22·3	23·7	26·8	21·8	21·2	38
13·7	24·6	20·6	25·9	18·7	22·5	21·3	15·3	24·5	17·2	26·0	12·3	14·7	21·2	23·2	20·9	25·5	31·0	15·5	15·6	39
15·6	14·5	20·6	23·2	20·5	21·3	21·5	21·4	15·6	21·0	16·6	18·7	11·3	20·2	14·7	19·8	22·2	23·6	21·2	21·4	40
18·4	10·2	15·6	22·7	20·9	21·7	24·6	14·9	17·3	18·1	25·5	9·1	13·6	14·8	18·6	18·3	15·2	20·2	19·5	18·3	41
14·2	11·8	13·1	24·7	16·9	19·1	26·1	17·2	15·1	26·9	22·2	15·5	14·7	14·8	16·6	15·8	20·5	25·6	21·8	18·3	42
13·9	14·5	18·1	27·9	19·1	17·7	23·3	19·1	20·1	19·3	16·6	17·6	15·9	18·4	19·4	19·4	15·5	15·5	14·9	25·1	43
15·1	16·6	19·6	26·0	23·6	20·1	24·1	21·4	19·5	24·8	26·5	15·5	11·9	20·5	17·3	20·1	26·7	21·7	20·1	20·9	44
22·0	21·4	23·1	23·0	16·5	21·2	24·6	24·5	18·4	23·1	19·9	15·0	15·9	20·5	18·8	22·6	24·5	27·9	20·1	24·6	45
16·8	20·9	23·6	28·8	29·3	25;6	26·1	27·5	26·2	26·9	19·9	16·6	10·8	24·5	21·2	26·4	27·2	20·2	26·9	23·0	46
23·2	23·6	25·6	30·9	23·6	29·9	30·5	35·2	27·3	24·8	23·2	15·0	10·8	28·0	24·3	29·5	27·2	27·9	13·8	22·5	47
29·1	24·6	34·7	33·0	29·3	33·3	27·2	28·7	27·3	28·6	25·5	21·9	15·9	22·6	22·7	25·8	29·7	24·4	20·1	26·7	48
29·6	22·5	31·1	34·9	35·6	29·3	28·2	24·8	34·6	28·2	32·6	14·4	11·3	25·2	24·3	27·2	28·7	24·0	16·6	23·0	49
31·9	30·5	25·6	31·8	24·9	27·6	19·7	22·9	20·1	24·0	23·7	22·4	17·0	22·1	23·6	27·0	24·7	19·0	18·9	21·2	50
24·4	19·3	23·1	31·6	24·0	22·8	24·4	16·8	27·3	13·5	19·4	26·2	22·1	18·6	17·5	23·9	24·2	22·1	14·9	19·1	51
20·8	20·4	28·6	26·3	20·0	24·9	21·3	22·9	22·9	16·4	15·6	19·2	23·8	23·3	20·6	20·0	22·7	25·2	18·3	20·4	52

TABLE 5.—**Births** and **Deaths** in 1893 in **Edinburgh, Glasgow,** and **Dublin,** and in certain **Colonial** and **Foreign Cities.**

CITIES.	POPULATION (enumerated or estimated).	BIRTHS. (Excluding Stillborn.)	DEATHS. (Excluding Stillborn.)	ANNUAL RATE per 1000 Persons living.		DEATHS FROM SOME ZYMOTIC DISEASES						
				Births.	Deaths.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa
EDINBURGH	267,261	7429	5268	27·9	19·8	1	165	56	59	155	38	
GLASGOW	677,883	23130	15789	34·2	23·4	25	849	261	209	709	138	
DUBLIN	349,594	10009	9409	28·7	27·0	–	103	25	34	191	305	
CALCUTTA	466,460	–	12055	–	25·9	15	16	–	14	36	4751	2
BOMBAY	821,764	15164	23059	18·5	28·1	203	287	?	?	?	5876	1
MADRAS	452,518	18290	18477	40·5	40·9	20	876	?	?	?	6575	2
SYDNEY (with Suburbs)	411,710	13945	6483	33·9	15·7	–	434	145	130	39	77	
BRISBANE do.	93,657	3454	1523	36·9	16·3	–	84	1	52	28	18	
PARIS	2,424,705	61101	52739	25·3	21·8	256	681	176	1264*	509	609	3
BRUSSELS (with Faubourgs)	488,188	12653	9675	25·9	19·8	19	353	11	191	101	130	
AMSTERDAM	437,892	14532	8136	33·3	18·6	–	68	18	100	140	69	
ROTTERDAM	222,233	8245	4852	37·2	21·9	112	31	72	22	68	12	
THE HAGUE	169,828	4031	3232	23·8	19·1	3	88	2	33	42	3	
COPENHAGEN	337,500	10301	6845	30·6	20·3	–	13	104	223	131	29	
STOCKHOLM	249,246	7060	4770	28·4	19·2	–	–	252	348*	59	21	
CHRISTIANIA	161,151	2631	2820	16·4	17·5	1	2	44	76	11	10	
ST. PETERSBURG (without Faubourgs)	954,400	30156	29242	31·6	30·6	92	262	499	252	192	489	5
MOSCOW	753,469	26983	27061	35·8	35·9	119	181	547	788	156	302	5
BERLIN	1,714,938	49710	36032	29·0	21·0	2	341	582	1578	608	161	4
HAMBURG (State)	634,878	23410	12977	36·9	20·4	3	59	136	411*	131	115	
DRESDEN	308,930	9917	7195	32·2	23·4	–	223	43	369*	120	14	
BRESLAU	353,551	12284	10256	34·8	29·1	–	177	34	406*	147	37	
MUNICH	385,000	13633	10075	35·4	26·2	–	204	83	258*	22	57	
VIENNA (with Suburbs)	1,435,931	47446	34468	33·0	24·0	36	1194	313	1631*	119	104	
PRAGUE	327,953	10722	9075	32·8	27·7	141	48	77	209	85	118	
BUDA-PESTH	539,516	19598	14432	36·4	26·8	6	144	105	573	60	81	
TRIESTE	158,314	4975	4420	31·4	27·9	203	25	39	224*	6	27	
ROME	449,430	11775	10020	26·2	22·3	6	270	17	123	33	341§	
MILAN	430,829	12800	11113	29·7	25·8	41	42	37	555	30	269	
TURIN	334,090	7562	7013	22·6	21·0	3	112	41	125	54	98	
VENICE	163,601	4274	3993	26·2	24·5	63	136	7	34*	7	42	
CAIRO	374,838	20418	19023	54·6	50·9	26	34	–	114*	132	576	
ALEXANDRIA (49 weeks)	231,396	10422	7890	47·9	36·3	27	17	1	95*	91	183	
BOSTON	487,397	–	11710	–	24·0	4	27	248	476	40	148	
NEW YORK	1,860,803	–	44370	–	23·9	100	387	552	1962	540	578	
BROOKLYN	990,891	–	20964	–	21·2	11	111	309	604	261	180	
PHILADELPHIA	1,115,562	–	23615	–	21·2	5	88	268	1159	212	458	
BALTIMORE	455,427	–	9554	–	21·0	–	39	36	185	60	255	
CINCINNATI	325,000	–	6092	–	18·7	?	?	?	?	?	?	
NEW ORLEANS	254,000	–	7130	–	28·1	–	1	1	123	25	362	
SAN FRANCISCO	330,000	–	5919	–	17·9	3	1	50	97	15	106	

* Including deaths from croup.

† Including 596 deaths from cholera in Calcutta, 137 in Bombay, 25 in Madras, one in Paris, 19 in Brussels, 3 in Amsterdam, 35 in Rotterdam, 7 in The Hague, 1,577 in St. Petersburg, 722 in Moscow, 9 in Berlin, 70 in Hamburg, 3 in Vienna, 131 in Buda-Pesth, 43 in Rome, and one in New Orleans.

‡ There were in addition 100 deaths from "croup."

§ Including 189 deaths from malarial fever.

TABLE 6.—LONDON. **Numbers** of **Natives** and **Immigrants** respectively, **living** in LONDON, in 1881 and in 1891.

	MALES.		FEMALES.		EXCESS OF FEMALES.	
	1881.*	1891.	1881.*	1891.	1881.*	1891.
TOTAL INHABITANTS - - -	1,797,043	1,990,748	2,018,501	2,220,995	221,458	230,247
BORN IN LONDON - - -	1,146,935	1,323,480	1,254,756	1,435,915	107,821	112,435
BORN OUT OF LONDON - - -	650,108	667,268	763,745	785,080	113,637	117,812

* The figures for 1881 relate to Registration London as constituted in 1891.

BLE 7.—GREATER LONDON (THE METROPOLITAN AND CITY POLICE DISTRICTS).—**Area, Population, Inhabited Houses, and Ratable Value.**

	AREA.		ENUMERATED POPULATION, 1891.	DENSITY OF POPULATION in 1891.		INHABITED HOUSES, 1891.	RATABLE VALUE.* 1891.
	In Acres.	In Square Miles.		Persons to an Acre.	Persons to a Square Mile.		
							£
REATER LONDON - -	443,421	693	5,633,806	12·7	8,130	789,408	39,799,902
REGISTRATION LONDON - -	74,672	117	4,211,743	56·4	35,998	544,977	31,819,412
OUTER RING - - -	368,749	576	1,422,063	3·9	2,469	244,431	7,980,490

* Supplied from the London County Council and Metropolitan Police Offices.

TABLE 8.—GREATER LONDON (THE METROPOLITAN AND CITY POLICE DISTRICTS).—**Population;** and **Births** and **Deaths** in the 52 Weeks of 1893.

	POPULATION, estimated to the middle of 1893.	ANNUAL RATE per 1000 living.			TOTAL BIRTHS.	TOTAL DEATHS.	The DEATHS registered in the 52 Weeks include									
							Deaths of		Deaths from							
		Births.	Deaths.	Principal Zymotic Diseases.			Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Deaths in Public Institutions.
GREATER LONDON	5,849,707	30·6	19·7	2·86	178,527	115,216	28,206	27,873	290	1964	1944	3985	2849	958	4699	26727
REGISTRATION LONDON*	4,306,411	31·0	21·3	3·08	132,975	91,536	21,845	21,815	206	1661	1596	3265	2330	719	3446	24597
OUTER RING -	1,543,296	29·6	15·4	2·25	45,552	23,680	6361	6058	84	303	348	720	519	239	1253	2129

* See note (†) to Table 1.

TABLE 9.—**London.—Mortality** in **Five Groups** of **Districts** (not corrected for deaths in Institutions), and **Meteorology** at **Greenwich, 1841–1893.**

	London.	Groups of Districts.					Meteorology at Greenwich.			
		West.	North.	Central	East.	South.	Mean Temperature of Air.	Degree of Humidity. Saturation = 100.	Rainfall, in Inches.	Mean Hourly Horizontal Movement of the Air.*
Area in Square Miles	116·7	16·2	21·1	3·3	8·6	67·5				
Decennial Increase of Population per Cent., 1881–91	10·4	10·6	9·7	−12·3 (decrease).	1·8	20·5				
Enumerated Population, 1891	4,211,743	740,735	993,884	247,538	705,114	1,524,472				
Density: Persons to an Acre 1841	25	27	28	172	61	11				
1871	42	52	54	150	107	21				
1881	49	62	67	127	116	28				
1891	56	71	74	116	128	35				
Years.	**Mean Rate of Mortality per 1000 in 53 years.**						**Means in 53 years, 1841–93.**			
1841-1893	23·1	21·7	21·8	24·8	25·3	22·8	° 49·2	81	ins. 24·5	miles. 11·1
	Means in Periods of Ten Years.						**Means in Periods of Ten Years**			
1841-50	24·8	23·0	22·7	24·7	26·2	26·2	° 49·4	82	ins. 24·5	miles. —
1851-60	23·7	22·6	22·2	24·4	25·1	24·4	49·0	81	24·4	10·0
1861-70	24·4	22·7	23·6	26·5	26·9	23·4	49·6	81	24·0	10·8
1871-80	22·5	20·8	21·9	24·9	25·0	21·9	49·2	81	26·5	11·6
1881-90	20·5	19·7	19·1	23·3	23·7	19·5	48·9	81	23·1	11·8
	Annual Rate of Mortality per 1000.						**Meteorology in each year.**			
1841	24·1	22·4	22·4	25·0	25·1	24·4	° 48·7	83	ins. 33·3	miles. —
1842	23·6	22·6	22·6	23·6	24·4	23·9	49·6	84	22·6	—
1843	24·8	23·3	23·1	25·3	26·4	24·8	49·4	87	24·6	—
1844	25·1	23·9	23·8	24·4	25·9	25·6	48·6	83	24·9	—
1845	23·3	22·5	21·0	24·0	24·6	23·8	47·6	85	22·4	—
1846	25·4	21·6	21·9	22·9	24·1	24·6	51·3	83	25·3	—
1847	26·8	24·5	25·4	27·9	29·4	27·7	49·5	81	17·8	—
1848	25·7	23·6	23·4	25·3	28·7	27·2	50·4	79	20·2	—
1849	30·1	26·1	23·7	27·9	31·8	37·6	50·0	78	23·9	—
1850	21·0	19·6	19·8	21·1	21·7	21·9	49·3	79	19·7	11·0
1851	23·4	22·0	22·2	24·1	24·3	24·0	49·2	78	21·6	10·3
1852	22·5	21·5	21·2	23·9	23·3	23·0	50·6	76	34·2	10·6
1853	24·4	22·3	22·4	25·1	26·5	25·3	47·7	79	29·0	9·5
1854	29·4	28·5	24·4	27·4	30·0	34·8	48·9	83	18·7	10·3
1855	24·3	23·0	23·3	25·1	25·5	24·6	47·1	83	21·1	9·9
1856	22·0	21·5	21·1	23·0	23·3	21·8	49·0	83	22·2	10·6
1857	22·4	21·2	21·5	23·8	24·6	21·5	51·0	83	21·4	9·3
1858	23·9	22·4	22·9	24·5	25·8	24·0	49·2	79	17·8	9·7
1859	22·7	21·4	21·7	24·1	24·0	22·6	50·7	80	25·9	9·5
1860	22·4	22·2	21·2	23·3	24·1	22·1	47·0	84	32·0	10·0
1861	23·2	22·1	22·3	25·4	24·0	22·8	49·4	84	20·8	9·9
1862	23·6	22·0	22·0	26·2	26·0	22·7	49·5	84	26·2	10·0
1863	24·5	22·9	23·8	26·9	26·5	23·3	50·3	80	20·0	10·3
1864	26·4	24·4	25·3	29·5	29·0	25·3	48·5	78	16·7	9·5
1865	24·5	22·6	24·5	27·1	26·5	23·2	50·3	80	29·0	9·3
1866	26·5	22·6	25·3	27·1	34·0	24·1	49·8	82	30·7	11·4
1867	23·0	21·7	23·1	24·8	24·2	22·1	48·6	82	28·4	11·8
1868	23·5	22·2	22·7	25·2	25·4	22·9	51·5	78	25·2	12·2
1869	24·6	22·2	23·5	26·6	27·9	23·8	49·5	81	24·0	12·2
1870	24·1	23·8	23·5	26·0	25·0	23·4	48·7	79	18·5	11·1
1871	24·6	22·5	25·6	25·6	26·1	24·0	48·7	81	22·3	10·5
1872	21·5	19·6	21·2	23·6	23·6	20·7	50·7	82	30·6	11·9
1873	22·4	20·5	21·2	25·1	25·3	21·7	48·9	82	28·4	11·8
1874	22·4	20·9	21·7	25·7	25·5	21·0	49·3	82	20·0	11·5
1875	23·6	22·2	22·2	26·2	25·7	23·3	49·2	80	28·2	11·5
1876	21·9	21·0	21·2	24·1	24·0	21·2	50·1	80	24·2	12·1
1877	21·6	19·2	21·5	24·2	24·5	20·5	49·4	79	28·9	13·0
1878	23·1	21·6	22·0	25·2	25·1	23·0	49·6	81	29·2	11·1
1879	22·6	20·9	21·5	26·3	25·5	21·8	46·2	83	31·3	11·3
1880	21·7	19·8	20·8	23·8	24·3	21·3	49·4	84	29·8	11·7
1881	21·3	19·6	19·7	23·4	24·3	20·5	48·7	81	25·2	12·1
1882	21·5	20·0	19·8	24·0	25·3	20·8	49·7	84	25·2	12·8
1883	20·8	19·8	19·4	23·3	24·4	19·8	49·4	82	21·9	12·1
1884	20·9	19·7	19·6	23·8	23·4	20·2	50·7	80	18·1	11·9
1885	20·4	19·9	19·3	22·9	23·0	19·1	48·6	81	24·6	12·0
1886	20·6	19·8	18·9	23·4	23·9	19·9	48·7	81	24·2	11·8
1887	20·3	19·9	18·9	23·5	23·2	19·4	47·8	79	19·9	11·5
1888	19·3	19·3	17·7	22·7	22·7	18·1	47·7	82	27·5	12·3
1889	18·4	18·1	16·9	20·9	21·2	17·7	48·3	83	23·3	10·2
1890	21·4	20·5	19·6	24·8	25·1	19·6	48·6	81	21·9	11·2
1891	21·4	20·8	20·0	26·5	24·0	19·8	48·4	82	25·1	11·7
1892	20·4	20·1	19·5	24·0	23·6	19·2	48·1	80	22·3	11·0
1893	21·3	19·7	20·2	25·7	21·9	19·5	51·1	76	20·1	11·2

NOTE. The populations upon which these rates of mortality have been calculated are deduced from the numbers enumerated at the six Censuses of 1841, 1851, 1861, 1871, 1881, and 1891. The deaths used for the 52 years 1841–92 are for the calendar years, while those for 1893 are the numbers registered in the 52 weeks ending 30th December 1893.

Hampstead and Lewisham did not form part of Registration London prior to 1847. Wandsworth was not included in Registration London until the commencement of 1844, but the facts for that district have been included, in calculating the rates in the above Table, for the years 1841–43. The hamlet of Mottingham was transferred from Lewisham District to the Outer Ring on 1st April 1887.

Certain changes affecting the West and Central groups of districts were made in the year 1868, but no corrections for these changes have been made in this Table for any year prior to 1861.

* Approximated to the results of Robinson's anemometer by reduction from Whewell's, up to 1859.

TABLE 10.—**LONDON: Population** at different **Ages**, as enumerated in **1851, 1861, 1871, 1881, and 1891**, with the Numbers of **Males** and **Females** at the various **Ages** in **1891.**

—	ALL AGES.	0–	5–	10–	15–	20–	25–	35–	45–	55–	65–	75–	85 & upwds.
1851	2,362,236	293,562	243,648	216,369	213,694	241,401	428,123	308,949	208,363	122,946	62,608	19,845	2,728
1861	2,803,989	362,296	300,259	234,349	259,155	277,389	476,802	366,417	246,918	149,503	74,039	23,721	3,141
1871	3,254,260	422,629	349,686	309,658	307,075	321,585	551,973	404,954	290,977	174,265	90,198	27,604	3,656
1881	3,816,483	497,044	419,740	366,111	368,628	385,236	641,265	471,131	320,530	205,921	103,815	32,982	4,080
1891	4,211,743	501,622	454,160	416,425	416,820	428,454	717,514	519,637	368,536	221,551	122,726	39,172	5,126
ales –	1,990,748	249,309	225,895	203,228	197,424	194,110	333,689	246,219	173,111	98,776	50,407	14,070	1,510
males –	2,220,995	252,313	228,265	210,197	219,396	234,344	383,825	273,418	195,425	122,775	72,319	25,102	3,616

NOTE.—In England and Wales the proportion of Females to Males in the population in 1891 was as 106 to 100; in London it as as 112 to 100. The proportions in 1881 were 105 and 112 respectively. The figures in this table refer to London as constituted n the respective census years.

TABLE 11.—**LONDON: Marriages, Births,** and **Deaths, 1879–1893.**

YEARS.	1879.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893 (52 weeks).
ARRIAGES – –	33,477	34,144	34,578	35,612	35,379	35,381	34,560	34,482	34,251	34,635	35,412	36,752	37,341	37,191	36,971
Persons	131,542	133,310	132,904	133,309	134,503	135,651	132,952	134,339	133,359	131,761	132,233	128,161	134,484	132,328	132,975
RTHS – – Males –	66,445	67,985	67,556	67,958	68,449	69,103	67,924	68,507	67,559	66,919	67,398	65,168	68,383	67,443	67,685
Females	65,097	65,325	65,348	65,351	66,054	66,545	65,028	65,832	65,790	64,842	64,835	62,993	66,101	64,885	65,290
Persons	83,964	81,957	81,431	83,015	81,108	82,448	80,978	82,691	82,443	79,244	76,162	89,268	89,122	86,833	91,536
EATHS* – – Males –	42,920	42,038	41,742	42,141	41,713	42,565	41,285	42,257	42,201	40,495	38,947	45,959	45,697	44,067	46,853
Females	41,044	39,919	39,689	40,874	39,395	39,883	39,693	40,434	40,242	38,749	37,215	43,309	43,425	42,766	44,683
CCESS OF BIRTHS OVER DEATHS –	47,578	51,353	51,473	50,294	53,395	53,203	51,974	51,648	50,916	52,517	56,071	38,893	45,362	45,495	41,429
Persons Married	18·0	18·1	18·1	18·4	18·1	17·9	17·4	17·2	16·9	16·9	17·1	17·6	17·7	17·4	17·2
NNUAL RATES ER 1000. Births –	35·5	35·3	34·7	34·5	34·5	34·3	33·4	33·4	32·9	32·1	31·9	30·7	31·9	30·9	31·0
Deaths	22·6	21·7	21·3	21·5	20·8	20·9	20·4	20·6	20·3	19·3	18·4	21·4	21·1	20·4	21·3

NOTE.—The figures in the above table, except those for 1893, relate to the calendar year ending 31st December. The figures for 893 relate to the 52 weeks ending 30th December 1893.

* *See* note † to Table 1.

TABLE **12.**—LONDON. **Population,** and **Zymotic** and

PERIOD AND YEAR.	ESTIMATED POPULATION.	DEATHS FROM PRINCIPAL ZYMOTIC DISEASES.									
		Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and Ill-defined Fever.	Diarrhœa and Dysentery.	Cholera.
Cols. - 1	2	3	4	5	6	7	8	9	10	11	12
Period.											
1841-50	2,103,487	8,416	13,011	18,314		18,079		20,890		16,926	15,588
1851-60	2,570,489	7,150	15,766	26,317		22,497		22,597		26,362	12,886
1861-70	3,018,193	8,347	17,338	34,391	5,323	26,550		27,149		31,578	7,403
1871-80	3,513,843	15,539	17,947	21,247	4,319	28,728	1,887	8,536	2,579	33,168	1,328
1881-90	4,000,475	5,634	25,449	13,268	10,435	27,686	327	7,502	717	29,922	941
1844	2,033,816	1804	1182	3029		1292		1721		831	65
1845	2,073,298	909	2318	1085		1816		1324		940	43
1846	2,113,535	257	747	928		2035		1838		2308	228
1847	2,202,673	955	1778	1433		1600		3297		2283	117
1848	2,244,837	1620	1144	4767		1630		3685		2247	652
1849	2,287,302	521	1154	2149		2349		2564		3837	14,125
1850	2,330,054	499	980	1169		1568		2032		2077	127
1851	2,373,081	1062	1297	1285		2185		2374		2755	213
1852	2,416,367	1159	595	2571		1569		2183		2513	162
1853	2,459,899	211	978	2016		2667		2617		2649	883
1854	2,503,662	694	1409	3477		2502		2816		3325	10,738
1855	2,547,639	1039	878	2611		2438		2460		2190	149
1856	2,591,815	531	1479	1819		2092		2717		2414	152
1857	2,636,174	156	1341	1599		2527		2195		3298	214
1858	2,680,700	242	2369	4184		2708		1919		2220	131
1859	2,725,374	1158	1330	3481	773	1742		1840		3513	193
1860	2,770,181	898	2090	2017	484	2067		1476		1485	51
1861	2,815,101	217	1062	2381	674	3548		1848		2740	168
1862	2,860,117	366	2334	3492	730	2168		3673		1839	106
1863	2,905,210	1996	1634	4955	799	2175		2871		2492	159
1864	2,950,361	547	2788	3244	611	2423		3782		3013	156
1865	2,995,551	640	1290	2179	431	2935		3217		3721	196
1866	3,040,761	1391	2220	1892	462	2960		2688		3294	5596
1867	3,085,971	1315	1143	1451	447	2278		2184		3060	240
1868	3,131,160	597	1962	2916	495	2338		2468		4110	324
1869	3,176,308	275	1456	5841	340	3769	716	1069	615	3495	219
1870	3,221,394	973	1449	6040	334	1956	472	976	570	3814	239
1871	3,267,251	7912	1427	1902	344	2291	384	871	436	3968	221
1872	3,319,736	1786	1680	918	267	3259	174	807	322	3588	181
1873	3,373,065	113	2149	645	320	2620	277	908	325	3950	162
1874	3,427,250	57	1680	2648	419	1867	312	879	337	3201	123
1875	3,482,306	46	1408	3677	581	3204	128	817	272	3289	108
1876	3,538,246	736	1720	2308	387	2737	159	769	202	3585	135
1877	3,595,085	2551	2387	1580	316	1817	157	901	194	2421	88
1878	3,652,837	1417	1500	1808	566	4483	151	1033	197	3534	124
1879	3,711,517	450	2475	2661	575	2934	71	819	160	1894	53
1880	3,771,139	471	1521	3100	544	3516	74	702	134	3738	133
1881	3,824,980	2367	2536	2114	657	1973	92	971	134	3055	95
1882	3,862,956	430	2338	2006	857	4682	53	975	95	2144	79
1883	3,901,309	136	2441	2006	952	1598	55	963	102	2852	83
1884	3,940,042	1236	2271	1430	951	3156	32	925	78	3903	163
1885	3,979,160	1419	2909	722	904	2481	28	597	78	2723	77
1886	4,018,663	24	2086	690	851	2871	13	618	73	3996	137
1887	4,058,565	9	2904	1443	953	2935	19	612	44	3801	107
1888	4,098,860	9	2425	1214	1511	2993	9	694	35	2206	54
1889	4,139,555	—	2308	785	1617	1787	16	538	42	2692	62
1890	4,180,654	4	3231	858	1382	3210	10	609	36	2750	84
1891	4,222,157	8	1807	598	1435	2872	11	558	44	2435	71
1892	4,264,076	41	3415	1167	1969	2507	11	436	22	2557	87
1893	4,306,411	206	1661	1596	3265	2330	5	693	21	3446	133

NOTE.—Wandsworth was not included in Registration London until 1844, nor Lewisham and throughout, but the population in each year refers

For the years 1844-50 the numbers of deaths from the various diseases are derived from The figures for

Infant Mortality in 50 Years 1844–93.

Annual Mortality, per Million Persons living, from principal Zymotic Diseases.										Annual Mortality of Infants under One Year of Age to 1000 Births.	Period and Year.
Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and Ill-defined Fever.	Diarrhœa and Dysentery.	Cholera.		
13	14	15	16	17	18	19	20	21	22	23	24
											Period.
402	623	863		867		979		782	688	157	1841-50
280	530	1017		877		886		1039	514	155	1851-60
276	576	1133	179	882		904		1040	243	162	1861-70
457	510	600	122	815	55	244	75	949	38	158	1871-80
115	636	335	259	693	8	189	18	748	23	152	1881-90
890	583	1494		637		849		410	32	152	1844
440	1122	525		879		641		455	21	149	1845
122	355	441		966		873		1096	108	157	1846
427	795	640		715		1474		1020	52	166	1847
724	511	2131		729		1647		1004	291	158	1848
229	506	943		1030		1125		1683	6196	169	1849
215	422	503		675		875		894	55	140	1850
448	547	541		921		1000		1161	90	154	1851
478	246	1061		648		901		1037	67	151	1852
86	398	820		1084		1064		1077	359	158	1853
277	563	1389		999		1125		1328	4289	164	1854
408	345	1025		957		966		860	58	152	1855
204	569	700		805		1045		929	58	150	1856
59	509	607		959		833		1251	81	156	1857
90	884	1561		1010		716		828	49	160	1858
425	488	1277	284	639		675		1289	71	150	1859
323	752	726	174	744		531		535	18	153	1860
77	377	846	239	1260		656		973	60	155	1861
128	816	1221	255	758		1284		643	37	143	1862
687	562	1706	275	749		988		858	55	151	1863
185	942	1097	207	819		1278		1018	53	169	1864
214	431	727	144	980		1074		1242	65	171	1865
457	730	622	152	973		884		1083	1840	172	1866
436	370	470	145	738		708		992	78	159	1867
190	625	929	158	745		786		1309	103	166	1868
87	458	1839	107	1187	225	337	194	1100	69	170	1869
302	450	1875	104	607	147	303	177	1184	74	164	1870
2422	437	582	105	701	118	267	133	1214	68	171	1871
537	505	276	80	979	52	242	97	1078	54	158	1872
34	637	191	95	777	82	269	96	1171	48	160	1873
17	490	773	122	545	91	253	98	934	36	156	1874
13	404	1056	167	920	37	235	78	944	31	162	1875
207	485	651	109	771	45	217	57	1010	38	157	1876
710	664	439	88	505	44	251	54	673	24	146	1877
388	411	495	155	1227	41	283	54	967	34	164	1878
121	667	717	155	791	19	229	43	510	14	148	1879
125	402	820	144	930	20	186	35	989	35	158	1880
619	663	553	172	516	24	254	35	799	25	148	1881
111	605	519	222	1212	14	252	24	555	20	151	1882
35	626	514	244	410	14	247	26	630	21	146	1883
313	575	362	241	799	8	234	20	988	41	153	1884
357	731	181	227	624	7	150	20	684	19	148	1885
6	519	172	212	714	3	154	18	994	34	159	1886
2	716	356	235	723	5	151	11	937	26	158	1887
2	590	295	319	728	2	169	9	537	13	146	1888
–	558	190	391	432	4	130	10	650	15	141	1889
1	773	206	331	768	2	146	9	658	20	163	1890
2	428	142	340	680	3	132	10	577	17	155	1891
10	801	274	462	588	3	102	5	600	20	154	1892
48	387	372	760	543	1	161	5	802	31	164	1893

Hampstead until 1847; thus the figures in the above Table do not relate to the same area to the same area as the facts in the other columns.

summaries of 52 or 53 weeks; the numbers for the 42 years 1851–92 relate to calendar years. 1893 are for 52 weeks.

TABLE 13.—**Causes** of **Deaths** REGISTERED in **London** in each of the 11 Years 1883–1893, and in each Quarter of 1893.

YEARS	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893*	1893. QUARTER ENDING Apr. 1	July 1	Sept. 30	Dec. 30
CAUSES OF DEATH.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	91 Days	91 Days	91 Days	91 Days
ALL CAUSES	‡ 80578	‡ 83388	‡ 80504	‡ 82276	‡ 82205	‡ 78848	‡ 75683	‡ 91243	‡ 90216	‡ 87749	91536	‡ 23693	‡ 20886	‡ 22007	‡ 24950
Small-pox (Vaccinated)	42	380	398	9	1	5	–	1	2	15	62	13	32	13	4
Small-pox (Unvaccinated)	55	417	503	8	1	–	–	–	3	14	79	15	35	19	10
Small-pox (No statement)	37	454	502	7	7	4	1	3	3	12	65	10	33	17	5
Measles	2420	2285	2928	2078	2894	2401	2314	3291	1807	3393	1661	317	439	459	446
Scarlet Fever	1989	1444	707	688	1447	1209	784	876	539	1174	1596	335	336	458	467
Typhus	56	31	28	13	18	10	15	11	8	11	5	–	4	–	1
Relapsing Fever	–	1	–	1	–	–	1	–	–	1	–	–	–	–	–
Influenza	11	6	3	5	5	3	5	652	2336	2264	1526	356	354	84	732
Whooping-cough	1582	3188	2479	2834	2928	2987	1749	3376	2876	2477	2330	531	592	619	588
Diphtheria	951	973	896	846	961	1301	1588	1417	1361	1885	3265	639	677	860	1089
Simple & Ill-defined Fever	90	78	82	70	48	33	43	33	42	20	21	3	4	7	7
Enteric Fever	935	936	585	618	606	677	538	618	547	436	693	102	114	212	265
Simple Cholera	83	163	79	137	106	54	62	83	73	87	133	1	22	105	5
Diarrhœa, Dysentery	2644	3781	2657	3950	3773	2176	2677	2753	2437	2546	3446	206	757	2186	297
Remittent Fever	17	20	16	20	14	9	12	7	4	3	2	–	–	1	1
Hydrophobia	8	9	27	9	2	3	7	2	2	–	1	–	–	–	1
Glanders	1	–	1	2	4	1	2	1	4	4	3	1	1	–	1
Cowpox and Vaccination	12	12	7	4	9	4	11	7	14	20	15	2	3	2	8
Venereal Affections	583	537	543	544	498	516	544	541	472	502	544	126	138	159	121
Erysipelas	324	381	328	257	341	249	189	250	214	292	424	74	63	107	180
Pyæmia Septicæmia	147	159	148	134	155	152	105	135	105	110	118	23	28	38	29
Puerperal Fever	307	327	323	279	328	275	222	237	222	313	352	86	59	79	128
Other Zymotic Diseases	98	102	104	70	100	76	81	63	73	88	94	25	21	20	28
Thrush	127	119	112	113	80	63	83	77	59	74	43	7	10	15	11
Worms and other Parasitical Diseases	17	17	17	18	22	14	14	17	15	15	17	6	3	5	3
Starvation, Want of Breast Milk	99	87	92	91	77	61	92	73	78	115	155	31	31	52	41
Alcoholism, Delirium Tremens	283	243	180	220	248	298	386	475	485	483	533	124	159	134	116
Rheumatic Fever, Rheumatism of Heart	384	444	416	362	418	397	331	445	384	410	517	103	89	150	175
Rheumatism	145	140	129	104	115	108	131	114	113	117	112	31	31	21	29
Gout	136	163	176	139	157	138	164	169	161	157	187	45	57	45	40
Rickets	166	190	170	218	180	230	230	282	267	287	248	62	62	62	62
Cancer	2547	2623	2624	2688	2874	2856	2982	3258	3277	3166	3412	840	839	902	831
Tabes Mesenterica	1421	1594	1374	1591	1406	1249	1261	1392	1277	1298	1269	219	286	531	233
Tubercular Meningitis	1420	1316	1325	1253	1245	1220	1189	1237	1194	1229	1180	288	323	317	252
Phthisis	8917	8881	8372	8332	7740	7459	7748	9074	8485	8036	8179	2177	1920	1883	2199
Scrofula, Tuberculosis	788	994	890	954	912	862	896	950	1035	1012	943	236	256	244	207
Other Constitutional Dis.	508	515	517	521	542	546	528	595	640	632	679	172	164	154	189
Premature Birth	1861	1911	1837	1930	1975	1938	2025	2249	2349	2394	2517	626	579	656	656
Atelectasis	136	126	150	128	138	161	127	113	140	158	179	37	37	51	54
Congenital Malformations	328	353	376	319	352	345	367	348	394	378	388	88	98	102	100
Old Age	2730	2473	2552	2651	2458	2485	2591	2711	2567	2982	2647	717	589	565	776
Apoplexy	1993	2141	2149	2133	2038	2236	2078	2313	2306	2206	2200	611	506	491	592
Epilepsy	333	378	346	369	345	365	360	443	437	395	404	100	100	103	101
Convulsions	2549	2602	2343	2390	2379	2392	2203	2353	2385	2148	2194	503	516	613	562
Other Diseases of Brain, &c.	4481	4440	4313	4462	4465	4364	4156	5003	4675	4222	4554	1214	1130	1093	1117
Diseases of Organs of Special Sense	135	121	112	138	98	116	114	144	134	142	132	36	50	43	53
Diseases of Circulatory System	5394	5472	5755	6117	6290	6259	6460	7546	7340	7061	7099	2170	1652	1436	1841

* For comparison of the numbers in 1893 with the corrected averages for the ten years 1883-92, see Table 14.
‡ *See* note (†), Table 1.

TABLE 13 (*cont.*)—**Causes of Deaths** REGISTERED in **London** in each of the 11 Years 1883–1893; and in each Quarter of 1893.

YEARS	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893*	1893. QUARTER ENDING Apr. 1	July 1	Sept. 30	Dec. 30
CAUSES OF DEATH.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	91 Days	91 Days	91 Days	91 Days
Croup	827	751	674	523	597	494	480	491	404	277	217	55	41	48	73
Bronchitis	10011	9211	10352	11232	10326	10085	8970	12448	13136	11183	10413	4155	1651	991	3616
Pneumonia	4431	4254	4642	4661	4797	4657	4061	6224	6915	6164	7198	1931	1921	1117	2229
Pleurisy	292	261	327	261	323	267	239	329	366	305	402	93	142	71	96
Other Diseases of Respiratory System	1511	1484	1563	1587	1535	1493	1311	1694	1668	1450	1524	500	286	236	502
Dentition	768	796	766	693	623	603	545	628	520	479	493	127	125	132	109
Sore Throat, Quinsy	113	102	98	89	107	102	92	120	92	97	130	30	25	40	35
Enteritis	364	336	365	518	509	464	570	745	758	773	1106	137	237	553	179
Peritonitis	336	340	330	323	338	334	252	372	365	324	393	89	94	107	103
Diseases of Liver	1496	1555	1432	1524	1462	1330	1321	1373	1503	1242	1296	298	320	372	306
Others, Digestive System	1500	1662	1468	1561	1430	1530	1425	1540	1523	1518	1682	377	393	487	425
Diseases of Lymphatic System and Ductless Glands	100	105	84	115	95	95	108	129	115	87	134	22	33	37	42
Diseases of Urinary System	1985	1878	1955	2049	2100	2116	2020	2209	2305	2168	2355	601	580	531	643
Diseases of Generative System	293	315	273	283	297	270	253	315	280	250	303	66	83	85	69
Accidents of Childbirth	180	193	182	200	163	169	166	212	286	304	335	79	81	82	93
Diseases of Locomotive System	393	381	357	389	345	368	375	392	330	331	262	59	70	61	72
Diseases of Integumentary System	253	279	256	273	273	258	217	293	325	334	333	87	59	79	108
ACCIDENT OR NEGLIGENCE.‡															
By Railways									125	110	75	19	21	19	16
By Vehicles or Horses									244	269	304	61	84	90	69
In Ships, &c. (not drowning)									21	30	22	5	7	2	8
In Building operations									42	40	41	6	15	13	7
In Conflagrations	2552	2518	2303	2393	2548	2503	2475	2660	30	34	26	8	6	11	1
By Burns, Scalds, Explosions									285	323	349	146	64	43	96
By Drowning									298	322	342	68	104	116	54
By Suffocation in Bed									624	621	574	212	121	84	157
By Poison or Poisonous Vapours									98	90	104	22	30	27	25
Other or not stated Causes									954	868	1081	269	265	292	255
Battle	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–
HOMICIDE.‡															
Murder and Manslaughter	75	70	62	68	80	76	79	73	67	67	58	12	25	9	12
SUICIDE.‡															
Suicide	368	367	345	402	398	400	373	351	430	450	443	107	107	124	110
(EXECUTION.)															
Hanging	2	2	4	–	2	1	1	4	3	6	1	–	–	1	–
ALL OTHER CAUSES	3438	3500	3045	3258	3060	2923	2784	3003	2911	3044	3262	744	697	1034	787

* For comparison of the numbers in 1893 with the corrected averages for the ten years 1883–92, see Table 14.

‡ The evidence at inquests is often insufficient to enable the coroner to certify whether a violent death resulted from accident, murder, manslaughter, or suicide. All such cases are classed under "accident or negligence."

TABLE **14.**—**Deaths** in several groups of **Ages** and from different **Causes** REGISTERED in **London** during the 52 Weeks of 1893.

CAUSES OF DEATH.	Corrected* Annual Averages, 1883-92.	TOTAL AT ALL AGES.	Under 5 Years.		5 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwds.
			Under 1 Year.	1–5.					
ALL CAUSES‡	87,546·9	91,536	21,845	13,355	6,227	11,733	16,561	17,980	3835
Small-pox† (Vaccinated)	89·7	62	3	4	6	32	15	2	-
Small-pox† (Unvaccinated)	105·2	79	16	23	16	10	5	4	-
Small-pox† (No Statement)	108·3	65	5	3	12	28	14	2	1
Measles	2713·7	1661	379	1193	82	6	1	-	-
Scarlet Fever	1146·7	1596	74	934	522	57	6	3	-
Typhus	21·1	5	-	-	3	-	2	-	-
Relapsing Fever	0·4	-	-	-	-	-	-	-	-
Influenza	556·2	1526	68	83	83	299	408	502	83
Whooping-cough	2773·1	2330	931	1304	95	-	-	-	-
Diphtheria	1280·5	3265	181	2032	941	65	32	13	1
Simple and Ill-defined Fever	56·7	21	3	6	4	5	3	-	-
Enteric Fever	683·0	693	4	24	250	307	91	17	-
Simple Cholera	97·5	133	51	26	9	11	18	15	3
Diarrhœa, Dysentery	3090·4	3446	2567	511	32	25	60	197	54
Remittent Fever	12·8	2	-	1	1	-	-	-	-
Hydrophobia	7·3	1	-	-	-	-	1	-	-
Glanders	2·1	3	-	-	-	1	2	-	-
Cowpox and Vaccination	10·5	15	15	-	-	-	-	-	-
Venereal Affections	555·1	544	381	26	4	46	65	18	4
Erysipelas	297·0	424	102	6	11	48	133	97	27
Pyæmia, Septicæmia	141·9	118	27	14	8	32	24	13	-
Puerperal Fever	297·9	352	-	-	9	314	29	-	-
Other Zymotic Diseases	89·9	94	27	28	6	12	5	13	3
Thrush	95·4	43	41	1	-	-	-	1	-
Worms & other Parasitical Diseases	17·5	17	1	4	-	4	7	1	-
Starvation, Want of Breast-milk	91·0	155	139	7	1	2	2	3	1
Alcoholism, Delirium Tremens	347·1	533	-	-	-	203	282	45	3
Rheumatic Fever, Rheumatism of Heart	419·6	517	2	14	175	183	109	27	2
Rheumatism	127·8	112	-	1	8	10	29	58	6
Gout	164·0	187	-	-	-	6	71	95	15
Rickets	233·4	218	95	117	6	-	-	-	-
Cancer	3037·9	3412	1	19	21	314	1509	1442	106
Tabes Mesenterica	1452·3	1269	851	280	82	37	13	6	-
Tubercular Meningitis	1327·7	1180	364	561	216	31	7	1	-
Phthisis	8730·9	8179	143	207	766	3842	2712	563	6
Scrofula, Tuberculosis	977·0	943	289	253	195	124	62	20	-
Other Constitutional Diseases	582·9	679	31	35	68	128	189	219	9
Premature Birth	2152·1	2517	2516	1	-	-	-	-	-
Atelectasis	144·8	179	179	-	-	-	-	-	-
Congenital Malformations	374·3	388	341	31	13	2	1	-	-
Old Age	2691·5	2647	-	-	-	-	5	1326	1316
Apoplexy	2270·2	2200	21	11	17	133	680	1131	207
Epilepsy	396·5	404	14	15	63	100	122	84	6
Convulsions	2496·4	2494	1916	263	14	1	-	-	-
Other Diseases of Brain, &c.	4687·0	4554	633	575	310	465	940	1406	225
Diseases of Organs of Special Sense	131·8	182	35	42	53	25	13	13	1
Diseases of Circulatory System	6636·5	7099	126	58	547	1003	2164	2813	388

* The annual averages have been raised for increase of population, and reduced for comparison with the deaths recorded in the 52 weeks of 1893. For the population in each group of ages, estimated to the middle of 1893, *see* Table 19.

† Those cases of small-pox only are returned as "Vaccinated" or as "Unvaccinated" which are so certified by registered medical men. When the medical attendant does not certify that the deceased has, or has not, been vaccinated, or when the cause of death is not certified by a registered practitioner, the case is returned under the heading "No Statement."

‡ *See* note ‖ Table 1.

TABLE **14** (*continued*).—**Deaths** in several groups of **Ages** and from different **Causes** REGISTERED in **London** during the 52 Weeks of 1893.

CAUSES OF DEATH.	Corrected* Annual Averages, 1883–92.	TOTAL AT ALL AGES.	Under 5 Years.		5 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwds.
			Under 1 Year.	1–5.					
Croup	580·1	217	19	170	28	–	–	–	–
Bronchitis	11250·0	10413	2423	1422	116	297	1613	3734	803
Pneumonia	5341·6	7198	1243	1593	342	1091	1615	1176	138
Pleurisy	312·3	402	15	39	38	110	111	79	10
Other Diseases of Respiratory System	1608·2	1524	264	254	75	131	352	385	63
Dentition	675·1	493	296	197	–	–	–	–	–
Sore Throat, Quinsy	106·4	130	21	45	30	9	11	12	2
Enteritis	538·3	1106	672	126	90	63	74	75	6
Peritonitis	359·1	393	94	23	99	116	83	52	3
Diseases of Liver	1475·9	1296	97	13	18	168	574	376	48
Others, Digestive System	1593·6	1682	400	87	93	251	378	409	64
Disease of Lymphatics, &c.	108·6	134	6	11	24	34	39	19	1
Diseases of Urinary System	2185·3	2355	22	46	133	403	802	845	104
Diseases of Generative System	207·4	303	9	4	5	113	125	44	3
Accidents of Childbirth	216·1	335	–	–	13	282	40	–	–
Diseases of Locomotive System	331·9	232	28	15	37	49	48	33	2
Diseases of Integumentary System	291·3	333	93	19	10	23	73	85	30
VIOLENT DEATHS.† (ACCIDENT.)									
By Railways	2663·0	75	–	–	11	36	21	7	–
By Vehicles or Horses		304	6	52	71	55	66	48	6
In Ships, Boats, Docks (exclusive of Drowning)		22	–	–	2	7	11	2	–
In Building Operations		41	–	–	1	11	21	8	–
In Conflagrations		26	2	6	9	6	3	–	–
By Burns, Scalds, Explosions		349	22	157	65	33	35	31	6
By Drowning		342	15	19	105	98	91	14	–
By Suffocation in Bed		574	556	12	1	1	3	1	–
By Poisons or Poisonous Vapours		104	5	8	15	26	40	10	–
Other or not stated Causes		1081	187	98	109	169	243	218	57
(VIOLENCE OTHER THAN ACCIDENTAL.)									
Homicide	75·4	58	27	5	3	18	4	1	–
Suicide	408·4	448	–	–	17	184	175	72	–
Execution	2·6	1	–	–	–	1	–	–	–
OTHER CAUSES	3235·7	3262	2831	184	28	32	71	94	22

* *See* note * on preceding page.

† The evidence at inquests is often insufficient to enable the coroner to certify whether a violent death resulted from accident, murder, manslaughter, or suicide. All such cases are classed under "accident or negligence."

TABLE **15.—Deaths** REGISTERED in the **London Registration Districts**, and **Mean Temperature** an **Registered Sunshine** at **Greenwich,** in each of the 11 Years 1883–1893.

REGISTRATION DISTRICTS.	AREA in Acres.*	DENSITY, Persons to an Acre, 1891.	1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	189
Mean Temperature	—	—	49°·4	50°·7	48°·6	48°·7	47°·8	47°·7	48°·8	49°·6	49°·4	48°·1	51°·
Registered Sunshine in Hours	—	—	1241	1115	1261	1228	1401	1068	1156	1255	1222	1277	1454
LONDON	74,672	56	81,108	82,448	80,978	82,691	82,443	79,244	76,162	89,268	90,597	88,412	91,53
1*a* PADDINGTON	1256	94	1974	1974	2040	2062	2023	2152	1925	2276	2347	2311	2279
1*b* KENSINGTON	2188	76	3030	3033	3193	3101	3126	3082	2710	3309	3634	3303	3221
2 FULHAM	3987	47	2618	2696	2761	2781	3201	3207	3183	3632	3644	3895	3887
3 CHELSEA	794	121	2093	2065	2208	2144	2188	1997	1981	2064	2232	2173	2127
4 ST. GEO. HANOVER SQ.	1940	69	3074	3040	2916	3103	2923	2855	2713	3090	2984	2821	2774
5 WESTMINSTER	216	173	775	841	772	788	734	634	692	691	642	567	578
6 MARYLEBONE	1506	95	2993	2807	2853	2880	2657	2606	2363	2797	2834	2689	2650
7 HAMPSTEAD	2248	30	690	841	770	774	771	778	835	1064	1019	1173	1452
8 PANCRAS	2672	88	4988	5181	5005	5058	5085	4782	4664	5166	5384	5243	5209
9 ISLINGTON	3109	102	5561	5515	5729	5510	5756	5206	5093	5962	6326	5983	6315
10 HACKNEY	3937	58	3756	3964	3793	3789	3847	3823	3613	4399	4417	4509	4765
11 ST. GILES	244	163	1009	1029	890	894	870	694	704	821	893	733	709
12 STRAND	403	68	1026	1018	947	989	912	923	885	910	1052	929	957
13 HOLBORN	811	175	2939	3039	2897	2964	3004	2937	2530	3088	3284	2984	3096
14 LONDON CITY	672	57	1448	1390	1422	1343	1361	1308	1177	1380	1295	1191	1392
15 SHOREDITCH	648	191	3023	2873	2950	3216	3071	2962	2635	3248	3192	2939	3195
16 BETHNAL GREEN	755	171	3082	2849	2807	3000	2845	2852	2620	2876	3107	2824	3031
17 WHITECHAPEL	379	196	2257	2200	2084	2261	2249	2181	2176	2492	2487	2555	2688
18 ST. GEO.-IN-THE-EAST	244	188	1248	1185	1287	1187	1161	1120	1018	1309	1102	1026	1151
19 STEPNEY	465	123	1596	1316	1597	1317	1333	1354	1266	1500	1330	1375	1396
20 MILE END OLD TOWN	677	159	2263	2193	2091	2142	2129	1987	1948	2263	2070	2250	2169
21 POPLAR	2323	71	3734	3719	3569	3617	3521	3521	3274	3989	3770	3872	3927
22 ST. SAVIOUR SOUTHWARK	1119	181	4366	4647	4229	4555	4469	3597	3797	4171	4187	3939	4074
23 ST. OLAVE SOUTHWARK	1506	91	3310	3382	3031	3397	3359	3163	3109	3461	3552	3369	3461
24 LAMBETH	3941	70	5402	5451	5212	5481	5430	5182	5163	5819	6085	5841	6165
25 WANDSWORTH	11454	27	4105	4203	4202	4424	4317	4330	3973	4905	4787	5016	5090
26 CAMBERWELL	4450	53	3428	3845	3765	3995	4140	4187	4193	4624	4876	4984	5024
27 GREENWICH	3425	48	2925	3193	3059	3005	3117	3017	3035	3320	3498	3482	3691
28 LEWISHAM	10793	9	1054	1117	1129	1175	1176	1216	1123	1254	1326	1370	1383
29 WOOLWICH	6500	17	1538	1439	1534	1711	1645	1559	1717	1903	2013	1812	1974
METROPOLITAN HOSPITALS AND ASYLUMS OUTSIDE REGISTRATION LONDON †	—	—	—	403	536	28	20	27	14	1482	1283	1454	1708

NOTE. — This Table is compiled from the Abstracts which appear in the Registrar General's Annual Reports, excepting for the year 1893, for which the numbers are derived from the Weekly Returns embracing 52 weeks.

* For area of Greater London see Table 7.

† For the years 1884-89 the figures refer to the Metropolitan Asylum Small-pox and Fever Hospitals only; for the years 1890-1893 the London County, London City, and Metropolitan Lunatic and Imbecile Asylums are added.

16.—LONDON. POPULATION; and BIRTHS and DEATHS in REGISTRATION DISTRICTS during the 52 Weeks of 1893.

REGISTRATION DISTRICTS.	Enumerated **Population**, 1891.	Total Births in 52 Weeks.	Total Deaths in 52 Weeks.	The DEATHS registered in the 52 Weeks include															
				Deaths of		Deaths from													
				Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple continued Fever.	Diarrhœa.	Cholera.	Violence.	Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death
LONDON	4211743	132975	91,536	21845	21815	206	1661	1596	3265	2330	5	693	21	3446	133	3425	7432	24598	794
ST DISTRICTS	740735	19919	14866	3277	3974	5	102	223	366	366	-	110	8	543	21	579	1153	4401	64
TH DISTRICTS	993884	29591	20891	4665	4995	11	385	437	1013	553	1	181	3	694	23	699	1486	5082	43
TRAL DISTRICTS	247538	6953	6154	1322	1294	-	170	35	192	136	-	61	1	181	2	333	636	2178	21
T DISTRICTS	705114	26285	17555	4615	3808	1	371	188	519	308	1	133	1	826	34	723	2140	5243	20
TH DISTRICTS	1524472	50227	30862	7930	7275	15	633	528	1139	904	3	206	8	1191	53	1075	1998	5986	646
OPOLITAN HOSPITALS & ASYLUMS OUTSIDE ISTRATION LONDON	—	—	1708	35	469	174	-	175	6	-	-	2	-	11	-	16	19	1708	-
EST DISTRICTS.																			
PADDINGTON	117848	3010	2279	460	651	-	30	10	63	61	-	23	-	61	-	122	190	592	-
KENSINGTON	136308	3671	3221	602	1051	3	20	12	38	56	-	12	-	100	5	76	203	1026	4
ULHAM	188878	6677	3837	1125	864	1	14	180	157	131	-	30	2	209	10	142	322	838	10
HELSEA	96253	2854	2127	497	490	1	25	8	27	67	-	9	2	83	2	64	139	714	7
T. GEO. HANOVER SQ.	134138	2854	2774	471	754	-	7	12	75	30	-	33	3	76	4	149	253	1128	24
ESTMINSTER	37312	853	578	122	164	-	6	1	6	11	-	3	1	14	-	26	43	103	19
RTH DISTRICTS.																			
ARYLEBONE	142404	4379	2659	649	677	-	33	33	61	77	-	11	1	77	4	84	194	493	6
AMPSTEAD	68416	1507	1452	166	294	1	3	132	248	6	-	40	-	23	-	32	55	698	6
ANCRAS	234379	7044	5203	1197	1218	-	151	47	164	105	-	25	-	167	7	240	429	1571	20
LINGTON	319143	9750	6315	1588	1382	10	137	63	133	201	1	37	1	259	5	185	458	1166	10
ACKNEY	229542	6911	4765	1065	1224	-	61	162	335	167	-	68	1	163	7	158	350	1154	1
TRAL DISTRICTS.																			
T. GILES	39782	1034	709	128	212	-	6	2	3	17	-	5	-	23	1	21	59	177	1
TRAND	27516	492	957	143	203	-	2	4	26	11	-	10	-	10	-	76	129	568	3
OLBORN	141920	4740	3096	926	599	-	147	22	100	96	-	22	-	132	1	100	254	590	8
ONDON CITY	38320	627	1392	123	280	-	15	7	63	12	-	24	1	18	-	136	194	843	9
AST DISTRICTS.																			
HOREDITCH	124009	4450	3195	807	839	-	129	19	103	78	-	8	1	167	3	83	259	862	1
ETHNAL GREEN	129132	4756	3031	812	640	-	80	36	83	57	-	10	-	144	5	91	285	722	2
HITECHAPEL	74462	3096	2686	560	416	1	42	13	86	30	-	45	-	62	9	219	414	1600	2
T. GEO.-IN-THE-EAST	45795	1966	1151	366	248	-	30	5	16	20	-	2	-	77	1	36	182	303	3
TEPNEY	57376	1953	1396	491	182	-	23	19	52	65	-	17	-	76	1	66	198	320	3
ILE END OLD TOWN	107592	4146	2169	596	568	-	55	27	50	43	-	16	-	116	7	53	244	384	9
OPLAR	166748	5918	3927	983	915	-	32	69	126	75	1	35	-	184	8	175	558	1052	-
UTH DISTRICTS.																			
T. SAVIOUR SOUTHWARK	202693	7294	4074	1293	772	-	67	52	86	214	-	15	-	207	12	124	326	359	103
T. OLAVE SOUTHWARK	136660	4983	3461	836	659	5	47	28	112	79	1	22	-	103	5	179	309	940	87
AMBETH	275203	9222	6165	1415	1523	-	115	130	358	147	2	58	4	203	7	226	377	1698	111
ANDSWORTH	307500	9794	5090	1473	1257	-	125	47	155	193	-	28	1	231	12	168	360	467	38
AMBERWELL	235344	7472	5024	1192	1356	2	88	26	90	110	-	23	-	191	7	97	235	1203	108
REENWICH	165413	5377	3691	881	854	5	108	214	212	101	-	41	1	140	8	145	209	912	86
EWISHAM	94335	2477	1383	311	418	2	20	9	55	12	-	10	1	39	1	49	65	152	36
OOLWICH	107324	3608	1974	529	436	1	63	32	61	48	-	9	1	77	1	77	114	255	77
OPOLITAN HOSPITALS & ASYLUMS OUTSIDE ISTRATION LONDON	—	—	1708	35	469	174	-	175	6	-	-	2	-	11	-	16	19	1708	-

TABLE **17.** LONDON.—POPULATION; and BIRTHS and DEATHS in REGISTRATION SUB-DISTRICTS during the 52 Weeks of 1893.

REGISTRATION SUB-DISTRICTS.	Enumerated Population, 1891.	Total BIRTHS in 52 Weeks.	Total DEATHS in 52 Weeks.	The DEATHS registered in the 52 Weeks include														
				Deaths of		Deaths from											Inquest Cases.	Deaths in Public Institutions.
				Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple continued Fever.	Diarrhœa.	Cholera.	Violence.		
WEST DISTRICTS.																		
St. Mary Paddington *WHH*	84159	2567	1529	403	456	-	30	8	22	55	-	11	-	46	-	44	93	202
St. John Paddington *H*	33687	443	750	57	195	-	-	2	41	6	-	12	-	15	-	78	97	330
Kensington Town *Ww*	118751	2993	2588	529	837	3	18	11	30	58	-	9	-	35	4	59	157	878
Brompton *H*	47557	678	633	73	214	-	2	1	8	8	-	3	-	15	1	17	46	148
St. Peter Hammersmith	8586	240	148	42	48	-	-	1	5	5	-	1	-	12	-	5	12	-
St. Paul Hammersmith *H*	88653	2726	1493	414	360	-	4	10	32	41	-	11	2	69	2	77	168	152
Fulham *Ww*	91639	3711	2246	669	456	1	10	169	120	85	-	18	-	128	8	60	142	686
Chelsea Kensal Town	21787	726	291	106	41	1	7	1	2	14	-	3	-	14	-	12	23	-
Chelsea North *WHHHHH*	41637	1263	1191	195	303	-	15	7	17	25	-	4	1	34	1	21	60	573
Chelsea South *HH*	32829	863	645	195	146	-	3	-	8	28	-	2	1	35	1	31	56	141
Mayfair *W*	23733	254	562	36	280	-	-	-	2	-	-	3	1	9	-	18	27	376
Belgrave *WHHH*	54631	1242	1156	183	261	-	3	6	57	15	-	24	1	24	1	75	118	483
St. John Westminster *HHH*	34103	968	531	160	103	-	1	3	4	13	-	1	-	28	1	22	53	21
St. Margaret Westminster *H*	21668	399	525	92	110	-	3	3	12	2	-	5	1	15	2	34	55	248
St. James Westminster *WHH*	24995	528	381	71	123	-	4	-	5	7	-	3	1	7	-	24	41	80
St. Anne Soho *HHHHHH*	12317	325	197	51	41	-	2	1	1	4	-	-	-	7	-	2	5	28
NORTH DISTRICTS.																		
All Souls Mylcb. *HHHHHHHHH*	37713	763	852	185	209	-	4	1	33	13	-	4	1	15	-	36	68	319
Rectory Marylebone *W*	20024	534	361	79	127	-	8	17	5	3	-	1	-	11	-	6	21	122
St. Mary Marylebone *HHHH*	19239	1446	361	112	80	-	2	4	6	10	-	2	-	15	-	9	22	49
Christchurch Marylebone *H*	33327	837	560	171	115	-	11	8	6	23	-	3	-	20	2	21	53	1
St. John Marylebone *H*	32101	799	516	152	146	-	8	3	13	28	-	1	-	16	2	12	30	2
Hampstead *WwHHHH*	68416	1507	1452	166	294	1	3	132	348	6	-	40	-	28	-	32	55	693
Regent's Park Pancras *HH*	36590	914	534	124	128	-	17	13	9	17	-	4	-	24	1	20	45	14
Tottenham Court *wHHHH*	26321	665	949	147	180	-	10	1	58	15	-	6	-	17	1	53	89	565
Gray's Inn Lane *HHH*	27455	843	725	179	148	-	19	5	23	7	-	3	-	30	2	61	91	202
Somers Town *HH*	32829	996	657	198	103	-	44	8	8	26	-	5	-	26	-	31	49	95
Camden Town *WH*	15419	701	609	136	246	-	23	1	8	11	-	1	-	18	-	27	47	374
Kentish Town *W*	95765	2920	1765	413	408	-	38	19	58	59	-	6	-	52	3	48	108	321
Upper Holloway *WWwHHH*	90235	2768	2498	453	744	10	57	9	55	61	1	14	-	93	-	68	152	1128
Islington South-west *H*	105557	3387	1833	625	338	-	58	39	34	78	-	10	-	89	5	53	154	17
Islington South-east	64158	1994	1126	304	255	-	26	6	28	32	-	7	-	50	-	46	100	-
Highbury *HH*	59193	1801	858	206	245	-	16	9	16	30	-	6	1	27	-	18	52	21
Stoke Newington *H*	30936	786	389	89	137	-	10	4	6	13	-	2	-	14	-	8	24	2
Stamford Hill	17759	425	250	63	68	-	8	2	7	14	-	-	-	10	-	8	19	-
West Hackney *H*	42602	1223	813	187	203	-	20	3	32	35	-	6	1	30	-	41	73	125
Hackney *WwwH*	96486	3101	2600	507	653	-	19	149	249	72	-	54	-	82	5	81	174	1023
South Hackney *w*	41769	1376	713	219	157	-	4	4	41	33	-	6	-	32	2	20	60	4
CENTRAL DISTRICTS.																		
St. George Bloomsbury	16695	295	180	39	52	-	2	-	1	7	-	2	-	6	-	5	9	-
St. Giles South *WH*	13454	555	340	40	123	-	3	1	1	5	-	1	-	11	-	3	31	141
St. Giles North *H*	9633	244	189	49	37	-	1	1	1	5	-	2	-	6	1	8	19	36
St. Martin-in-the-Fields *HH*	14616	223	337	53	60	-	1	-	6	2	-	4	-	5	-	35	56	187
St. Mary-le-Strand *H*	5706	108	115	19	26	-	-	1	1	1	-	-	-	1	-	11	19	12
St. Clement Danes *WH*	7194	161	379	67	45	-	1	3	19	8	-	6	-	3	-	29	51	273
Strand Union Work., Edmonton w	-	-	96	4	72	-	-	-	-	-	-	-	-	1	-	1	3	96
St. Geo. the Martyr *HHHHHH*	17921	445	653	173	98	-	12	3	52	9	-	9	-	14	-	15	38	361
St. Andrew Eastern *W*	15343	419	309	86	85	-	10	1	2	6	-	2	-	11	-	16	28	62
St. James Clerkenwell	16803	515	496	102	46	-	16	-	7	8	-	3	-	21	-	6	20	-
Amwell Clerkenwell	16843	508	268	80	52	-	22	2	3	6	-	1	-	14	-	13	33	-
Pentonville	17155	753	336	117	55	-	24	7	8	13	-	1	-	12	-	8	26	-
Goswell Street	15375	530	287	85	67	-	10	2	13	15	-	1	-	18	-	9	21	-
City Road *HHHL*	29177	1415	637	218	94	-	36	5	13	25	-	3	-	29	1	24	64	34
Whitecross Street	8278	250	151	48	19	-	15	1	-	11	-	2	-	9	-	6	19	-
Finsbury	4935	105	71	17	10	-	2	1	2	3	-	-	-	2	-	1	3	-
Holborn Union Work., Mitcham w	-	-	83	-	70	-	-	-	-	-	-	-	-	2	-	-	2	83
St. Botolph *H*	8944	224	150	29	37	-	4	3	2	3	-	-	-	3	-	4	9	6
Cripplegate	4539	70	58	10	20	-	1	-	1	-	-	-	-	1	-	5	7	-
St. Sepulchre *H*	4444	77	876	62	113	-	8	3	60	9	-	24	-	8	-	100	134	802
St. Bride *W*	6594	126	111	11	34	-	2	-	-	-	-	-	-	1	-	7	14	8
Allhallows Barking	10422	104	125	11	44	-	-	1	-	-	-	-	1	3	-	16	26	-
Broad Street *H*	3377	26	47	3	20	-	-	-	-	-	-	-	-	-	-	4	5	1
City of London Asylum, Stone	-	-	25	-	12	-	-	-	-	-	-	-	-	-	-	-	-	25

Note.—The letters placed against the names of the sub-districts denote Public Institutions situated therein, namely:—*W*—Workhouse *w*—Workhouse Establishment receiving inmates from other Districts than that in which it stands; *H*—Hospital; *L*—Lunatic Asylum *L**—Private Lunatic Asylum in which paupers are received. For detailed list of the several Institutions, *see* Table 20.

ABLE 17 (*continued*).—LONDON.—POPULATION; and BIRTHS and DEATHS in REGISTRATION SUB-DISTRICTS, during the 52 Weeks of 1893.

REGISTRATION SUB-DISTRICTS.	Enumerated Population, 1891.	Total Births in 52 Weeks.	Total Deaths in 52 Weeks.	The DEATHS registered in the 52 Weeks include															
				Deaths of		Deaths from											Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death.
				Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple continued Fever.	Diarrhœa.	Cholera.	Violence.			
EAST DISTRICTS.																			
Shoreditch South *HL**	20098	527	374	88	69	-	20	2	7	9	-	1	1	17	-	6	34	68	-
Hoxton New Town *w*	29313	1132	845	182	330	-	36	7	14	23	-	-	-	33	1	23	69	257	-
Hoxton Old Town	28354	999	549	196	81	-	29	1	15	21	-	2	-	42	1	12	47	-	-
Bethnal Green *WH*	46244	1792	1427	341	359	-	44	9	70	25	-	5	-	75	1	42	109	537	1
Bethnal Green North *H*	51520	1905	965	310	155	-	29	16	20	27	-	2	-	48	2	25	121	35	1
Bethnal Green South	33489	1339	663	233	89	-	31	13	29	18	-	4	-	36	1	21	67	-	1
Bethnal Green East *WHL**	44123	1512	1403	269	393	-	20	7	34	12	-	4	-	60	2	35	97	687	-
Bromfields	22456	841	335	126	54	-	7	2	7	10	-	2	-	21	-	12	48	-	1
Mile End New Town *W*	17908	1015	699	145	177	1	11	4	4	5	-	-	-	17	2	8	60	435	-
Stepney Church *H*	20298	825	1468	211	151	-	16	5	75	15	-	42	-	19	5	187	268	1165	-
Whitman's Fields	13800	415	184	78	34	-	8	2	-	-	-	1	-	5	2	12	38	-	1
St. George's North	37738	1661	680	290	87	-	19	4	9	11	-	1	-	52	1	27	145	-	3
St. John, St. Geo. East *W*	8057	305	471	76	161	-	11	1	7	9	-	1	-	25	-	9	37	303	-
Limehouse *H*	10246	311	510	220	30	-	8	1	26	14	-	3	-	24	-	29	57	320	-
Limehouse	14928	446	290	80	50	-	9	5	13	14	-	3	-	15	-	14	52	-	-
Poplar House	32202	1196	696	191	102	-	6	12	13	37	-	11	-	27	1	23	89	-	3
Poplar East End Old Town West *H*	33650	1744	639	222	111	-	15	8	18	20	-	5	-	38	1	14	77	11	6
Poplar East End Old Tn. East *WwwH*	68942	2402	1530	374	457	-	20	19	32	23	-	11	-	78	6	39	167	373	3
Poplar *L**	40865	1402	784	228	141	-	7	8	65	16	-	11	-	27	1	27	72	40	-
Canning Town *wwwH*	70000	2588	2120	461	540	-	16	30	41	38	1	18	-	99	5	79	277	905	-
Canning Town *WW*	56383	1928	1038	294	234	-	9	31	20	21	-	6	-	58	2	69	209	107	-
SOUTH DISTRICTS.																			
Lambeth Southwark *WH*	13264	378	224	57	72	-	4	-	4	7	-	-	-	9	-	8	19	28	14
Lambeth Southwark	13813	402	225	51	35	-	2	4	1	11	-	-	-	10	-	17	23	-	9
Lambeth Road	21837	838	451	160	57	-	20	8	4	18	-	2	-	36	-	14	49	-	7
Lambeth Road *WH*	16624	634	526	179	46	-	4	5	27	52	-	1	-	24	1	16	51	191	9
Lambeth Road *HL*	21221	697	481	126	83	-	8	8	8	23	-	5	-	13	1	11	43	29	7
Kennington	26596	1005	466	155	80	-	7	7	14	22	-	2	-	18	4	18	80	-	11
Walworth *W*	61342	2245	1240	383	303	-	14	17	23	61	-	4	-	69	4	29	85	111	28
Newington	27866	1095	511	182	96	-	8	3	10	20	-	1	-	28	2	11	26	-	18
Southwark *WH*	12723	412	316	107	120	-	4	2	29	5	-	13	-	12	1	110	136	596	8
Southwark Market	14952	533	313	105	51	-	16	4	6	7	-	-	-	19	-	6	29	-	20
Bermondsey *W*	15660	719	329	109	63	-	13	3	12	12	-	1	-	11	-	11	26	18	14
St. James Bermondsey	54070	1940	954	296	169	-	7	7	42	22	1	3	-	34	2	20	54	-	25
Deptford *WH*	39255	1379	1049	219	256	5	7	12	23	33	-	5	-	27	2	32	64	336	26
Greenwich Road First *H*	14031	513	324	114	38	-	5	5	9	13	-	2	-	19	-	16	32	53	7
Greenwich Road Second *H*	14614	1008	285	108	35	-	3	1	2	13	-	-	-	7	1	20	32	19	6
Deptford Church First *H*	18075	610	946	165	135	-	3	2	100	25	-	7	-	21	2	115	142	616	5
Deptford Church Second *WW*	39097	1632	1383	272	454	-	36	3	12	28	-	4	2	30	1	25	75	684	14
Greenwich First *H*	19759	875	270	233	-	36	7	23	23	-	3	-	51	2	29	47	6	6	
Greenwich Second	39708	1659	616	127	195	-	6	2	15	13	1	2	-	13	-	11	16	-	22
Lewisham *w*	73105	2002	1402	286	325	-	15	108	194	18	1	39	1	42	-	15	25	205	40
Lewisham *W*	25657	639	334	73	108	-	11	2	3	4	-	1	1	20	1	5	8	15	11
Battersea	67244	2399	1159	378	203	-	77	9	38	46	-	7	-	53	2	43	113	-	7
Battersea *WwH*	83314	2826	1642	464	415	-	13	8	52	69	-	7	-	67	5	59	124	363	9
Clapham *HH*	43698	1102	603	140	167	-	26	6	17	16	-	3	-	24	3	15	33	18	10
Wandsworth *WHL*	46717	1586	729	237	165	-	2	3	28	27	-	6	-	37	-	27	61	32	-
Putney	17771	462	258	56	67	-	5	1	14	15	-	2	-	13	1	9	10	-	-
Clapham *ww*	48756	1419	699	178	240	-	2	20	6	20	-	3	1	37	1	15	22	54	12
Richmond	6809	65	74	5	24	-	-	-	3	1	-	4	-	1	-	3	9	-	-
Kingsborough *WwL*L**	81686	2405	2322	366	804	2	22	13	84	30	-	8	-	74	3	36	72	1122	32
Wandsworth *WW*	83483	2724	1438	439	335	-	15	7	29	38	-	6	-	66	1	34	77	81	35
Camberwell	63366	2278	1190	382	193	-	51	6	24	41	-	5	-	50	3	24	77	-	41
Camberwell North	35314	1332	677	237	118	1	10	12	25	28	-	4	1	39	-	29	48	-	22
Camberwell Central *w*	42007	1575	1072	279	118	2	61	184	140	30	-	20	-	47	1	21	29	310	22
Camberwell South	30852	670	436	84	148	-	8	8	8	12	-	2	-	12	-	15	18	-	17
Camberwell West *H*	22097	639	418	102	104	1	19	3	13	16	-	5	-	12	1	25	42	24	13
Camberwell East *WH*	35233	1161	1038	179	364	1	10	5	26	15	-	10	-	30	6	55	72	578	12
Peckham *H*	5682	120	75	15	17	-	2	2	4	1	-	1	-	5	-	4	6	3	3
Peckham *H*	23541	458	277	62	86	-	1	-	12	4	-	1	-	6	1	8	11	17	10
Peckham *WH*	30950	971	523	111	175	2	5	4	9	5	-	4	1	16	-	21	30	118	7
Dulwich *H*	34162	928	508	123	140	-	12	3	50	2	-	4	-	12	-	16	18	14	16
Norwood *HH*	14040	382	248	56	63	-	3	10	2	6	-	1	-	9	-	8	11	43	10
Norwood Dockyard	19606	581	328	95	78	-	10	4	2	8	-	2	1	20	-	18	25	-	12
Norwood Arsenal *HH*	21242	731	348	104	62	-	3	3	5	12	-	1	-	13	-	24	29	17	16
Lewisham West *H*	15869	446	238	59	59	-	2	4	10	6	-	-	-	11	-	2	14	-	12
Lewisham East *W*	36567	1468	812	211	174	1	45	11	44	16	-	5	-	24	1	25	35	195	27
Greenwich Asylum	-	-	166	-	49	-	-	-	-	-	-	-	-	-	-	1	1	166	-
Lewisham Asylum	-	-	137	-	74	-	-	-	-	-	-	-	-	1	-	-	-	137	-
Leopold Hill Asylum	-	-	184	-	48	-	-	-	-	-	-	1	-	2	-	1	2	184	-
Hospital Ships and Camp, Dartfd.	-	-	189	27	7	174	-	6	-	-	-	-	-	1	-	1	1	189	-
Plumstead Asylum	-	-	159	-	35	-	-	-	-	-	-	-	-	4	-	1	1	159	-
Woolwich Asylum	-	-	144	-	51	-	-	-	-	-	-	-	-	1	-	-	-	144	-
Bexley Hatch Asylum	-	-	233	-	84	-	1	-	-	-	-	-	-	-	-	6	7	233	-
North Eastern Hospital	-	-	145	7	-	-	-	128	6	-	-	1	-	1	-	3	3	145	-
Shoreditch Hill Hospital	-	-	40	-	-	-	-	40	-	-	-	-	-	-	-	-	-	40	-
Wandsworth Asylum	-	-	201	-	92	-	-	-	-	-	-	-	-	-	-	3	2	201	-
Woolwich Asylum	-	-	110	1	29	-	-	-	-	-	-	-	-	1	-	-	2	110	-

TABLE 18.—OUTER RING (excluding Metropolitan Workhouses, Hospitals, and Asylums).—AREA; POPULATION BIRTHS and DEATHS Registered during the 52 Weeks of 1893.

District and Sub-district Numbers.	REGISTRATION SUB-DISTRICTS.	Area in Acres	Enumerated Population, 1891.	BIRTHS.	DEATHS.	The DEATHS registered in the 52 Weeks include														
						Deaths of		Deaths from												
						Infants under 1 Year of Age.	Persons aged 60 Years & upwds.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	Cholera.	Violence.	Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of	
	LONDON—OUTER RING	368,749	1,422,063	45,552	23,680	6361	6058	84	303	848	720	519	239	1253	43	752	1343	2129	42	
30 : 1	Carshalton *wHH*	12228	26108	594	293	61	86	1	7	6	2	10	1	8	-	14	15	12		
2	Epsom, *part of* * *WwH*	10123	12503	286	203	46	75	-	1	-	4	-	2	7	-	1	4	62		
37 : 1	Godstone, *part of* * *W*	2754	1698	41	15	2	4	-	-	-	2	-	-	-	-	-	1	-		
38 : 1	Croydon *WwHH*	20851	123699	3419	2177	511	679	1	21	15	90	28	21	93	5	67	165	328		
2	Mitcham *w*	11697	23088	655	323	86	104	-	8	1	1	23	-	20	1	10	29	4		
39 : 1	Wimbledon *HHH*	3220	25761	782	363	105	90	-	6	4	4	2	-	19	-	10	27	5		
2	Kingston *WHH*	8071	44765	1235	800	153	232	3	7	7	23	6	2	21	-	29	62	123		
3	Esher, *part of* *	6601	12059	337	173	31	60	-	-	-	8	2	1	2	-	8	10	8		
4	Hampton *H*	4565	18252	479	278	71	66	-	5	4	7	11	-	17	-	17	19	5		
40 : 1	Richmond *WH*	2160	25339	579	427	73	164	1	2	2	6	6	4	13	-	19	33	99		
2	Mortlake *H*	2823	16159	467	270	67	51	-	1	1	30	3	2	6	-	30	42	11		
41 : 1	Bromley *HHH*	9127	23815	989	444	90	124	-	3	11	23	7	10	18	-	17	18	33		
2	Beckenham *H*	6542	21969	723	105	34	33	-	1	-	2	2	3	7	-	-	4	2		
3	Chislehurst, *pt. of* *WHH	14307	20372	574	425	100	141	-	8	2	9	9	1	9	-	14	24	110	1	
42 : 1	Bexley *H*	12540	30590	934	437	106	135	3	3	4	11	14	2	23	1	24	34	6	1	
2	Dartford *Work*, pt. of*	—	—	8	33	1	19	3	-	-	-	-	-	-	-	-	-	33		
124 : 1	Sunbury *w*	11054	13671	333	183	46	45	-	10	-	3	2	1	3	-	9	9	8		
2	Staines *W*	18277	13221	416	229	49	75	2	15	2	6	3	1	10	-	12	15	23		
125 : 1	Hillingdon *WHH*	6035	12237	355	204	40	76	2	1	2	3	-	3	4	-	7	13	30		
2	Uxbridge	6172	5417	146	96	14	30	-	1	1	2	1	-	3	-	5	6	-		
3	Hayes *wH*	14537	12618	347	136	29	30	-	-	-	11	2	-	2	-	10	12	5		
126 : 1	Isleworth *WH*	6967	26273	820	544	142	194	2	8	1	4	4	2	27	1	16	26	120		
2	Twickenham *HH*	2415	16327	468	230	62	75	-	-	4	1	12	3	10	-	7	14	14		
3	Brentford *HHHH*	4318	37777	1072	574	155	167	-	16	9	4	5	6	45	-	11	27	15		
4	Chiswick	1245	21963	676	338	104	71	-	5	2	5	9	3	25	-	7	21	-		
5	Acton *wH*	6132	30945	1029	554	192	140	-	2	11	4	7	4	60	-	10	24	5		
127 : 1	Harrow *HH*	13809	15715	432	206	34	68	-	1	1	4	3	2	5	-	12	16	9		
2	Edgware *H*	6994	3844	94	49	6	18	-	-	-	5	-	-	-	-	4	4	4		
3	Willesden *HHH*	4383	61235	2253	1025	345	199	1	12	16	37	34	8	53	4	31	61	21		
4	Hendon *W*	8382	15843	535	324	75	98	2	10	6	2	3	3	6	1	16	28	87		
128 : 1	South Mimms	15599	8474	266	92	15	40	-	-	1	1	1	1	3	-	3	6	3		
2	Barnet *wHH*	5441	11778	293	180	26	69	-	-	1	4	3	-	7	-	7	10	49		
3	Finchley *HH*	4688	25820	696	315	73	106	-	18	9	13	9	1	7	-	7	17	11		
129 : 1	Hornsey *H*	3039	61097	1536	777	169	225	-	15	14	27	16	7	41	2	17	39	10		
2	Tottenham *H*	4642	97174	3483	1652	487	331	2	14	25	61	41	24	82	5	71	141	103		
3	Edmonton *Ww*	7489	36351	1261	662	164	197	1	3	6	15	3	10	55	1	16	55	166		
4	Enfield *WWHH*	12639	31803	1049	465	137	116	-	14	9	18	12	8	21	-	15	27	54		
5	Waltham Abbey	11017	6066	190	79	24	21	-	-	2	2	1	-	4	-	2	3	-		
6	Cheshunt *H*	8480	9320	318	117	35	38	-	6	2	3	-	1	4	-	-	3	1		
135 : 1	Hatfield, *part of* *	3306	582	14	3	-	3	-	-	-	-	-	-	-	-	-	-	1		
137 : 1	Bushey	9331	7737	191	83	10	30	-	1	2	4	-	-	1	-	-	1	4		
2	Watford *Work.*, pt. of *	—	—	-	4	-	1	-	-	1	-	-	-	-	-	-	-	4		
136 : 1	Stratford *H*	1100	42983	1605	879	286	157	-	9	6	34	25	14	41	4	69	51	40		
2	Plaistow *HHH*	1242	58030	2538	1239	416	193	53	8	30	24	53	18	93	-	23	35	66		
3	Canning Town *H*	1533	54750	2304	1153	411	130	2	7	26	13	52	24	104	4	47	53	30		
4	Forest Gate *w*	806	49140	1520	781	233	130	-	12	18	24	24	9	31	1	9	16	4		
5	East Ham *ww*	3286	32713	1464	637	221	88	3	19	18	32	15	2	44	1	16	21	9		
6	Leyton *WwL*	4334	70188	2471	1438	349	414	1	6	27	40	29	20	103	5	20	31	352		
7	Walthamstow *HH*	6501	57330	2110	921	274	190	-	9	20	31	21	10	53	5	24	36	4		
137 : 1	Chigwell, *part of* * *H*	11779	12941	376	139	35	36	-	1	1	4	-	3	8	-	7	11	-		
2	Epping *Work.*, pt. of *	—	—	2	11	-	7	-	-	1	-	-	-	-	-	-	-	10		
139 : 1	Romford, *part of* * *W*	6556	4324	167	127	23	32	-	6	12	1	-	6	8	1	-	4	26		
2	Ilford	8493	10913	351	179	39	48	-	-	5	7	6	3	6	1	5	5	-		
3	Barking Town	3814	14301	629	289	90	37	1	1	-	44	-	3	21	-	7	12	-		

* The parts of sub-districts included within that portion of the Metropolitan Police District which forms the Outer Ring are as follows:—30 : 2, Epsom sub-district, except the parishes of Ashstead and Headley (pop. 1766); 37 : 1, the parishes of Warlingham and Farley in Godstone sub-district; 39 : 3, Esher sub-district, except the parish of Esher (pop. 2202); 41 : 2, Chislehurst sub-dirtict, except the parishes of Chislehurst, Cudham and Knockholt (pop. 3097); 135 : 1, the parish of Northaw in Hatfield sub-district; 137 : 1, Chigwell sub-district, except the parish of Theydon Bois (pop. 1079); 139 : 1, the parish of Dagenham in Romford sub-district; also deaths in Workhouses belonging to the Outer Ring in 42 : 1, Dartford, 137 : 2, Watford, and 137 : 2, Epping, sub-districts.

TABLE 19.—**Temperature** at **Greenwich**; **Population**; **Total Deaths**, and **Deaths** at **Seven groups of Ages**, in **London**, in each Week of 1893.

POPULATION estimated to the middle of 1893 - -				4,306,411	111,300	401,597	1,316,342	1,458,518	742,782	258,128	17,744
Number of Week.	WEEK ENDING	TEMPERATURE.			AGES AT DEATH.							
		Mean.	Highest Reading.	Lowest Reading.	ALL AGES.	Under 1 Year.	1—5	5—20	20—40	40—60	60—80	80 and upwards.
	YEAR (of 52 Weeks)	° 51·1	° 95·1	° 13·9	91,536	21,845	13,355	6,227	11,733	16,561	17,980	3,835
	First Quarter (13 Weeks).	40·9	70·8	13·9	23,693	4,586	3,084	1,419	3,094	4,627	5,599	1,284
	Second „ (13 Weeks).	57·0	91·0	30·2	20,886	4,890	2,930	1,455	2,767	4,090	4,036	718
	Third „ (13 Weeks).	61·9	95·1	37·5	22,007	6,842	3,378	1,574	2,603	3,598	3,267	745
	Fourth „ (13 Weeks).	44·6	66·7	20·2	24,950	5,527	3,963	1,779	3,269	4,246	5,078	1,088
	1893.											
1	January 7	25·5	32·7	13·9	2508	415	272	125	337	555	658	147
2	„ 14	35·1	40·1	30·7	2503	363	285	125	306	529	717	178
3	„ 21	35·0	44·1	23·0	2101	370	224	108	259	437	579	124
4	„ 28	41·2	49·7	31·6	1831	326	203	110	232	373	478	109
5	February 4	44·5	54·2	31·3	1673	334	197	113	222	333	371	103
6	„ 11	40·5	52·4	23·1	1579	323	194	101	216	295	370	80
7	„ 18	43·7	55·1	32·2	1556	305	228	123	190	305	328	77
8	„ 25	39·3	58·8	29·2	1629	372	235	90	202	270	385	75
9	March 4	43·8	57·2	32·9	1718	370	228	106	220	347	357	90
10	„ 11	46·7	61·0	32·4	1576	328	200	90	228	306	328	96
11	„ 18	45·5	62·3	29·7	1578	343	275	100	217	262	322	59
12	„ 25	43·9	64·3	24·2	1708	365	262	114	224	302	362	79
13	April 1	49·3	70·8	29·1	1732	372	281	114	241	313	344	67
14	April 8	48·4	66·6	35·1	1683	344	256	96	218	334	367	68
15	„ 15	45·3	66·6	30·2	1681	332	217	110	242	359	341	80
16	„ 22	55·4	80·0	37·4	1730	362	240	97	248	355	369	59
17	„ 29	56·0	77·3	41·2	1579	300	214	107	234	335	337	43
18	May 6	55·0	77·0	40·4	1576	290	212	123	222	318	350	61
19	„ 13	57·8	80·4	38·0	1460	311	195	106	185	319	289	55
20	„ 20	59·3	79·0	47·3	1503	293	209	114	232	318	292	45
21	„ 27	58·7	75·9	46·4	1459	306	215	107	203	305	275	48
22	June 3	55·7	75·4	37·3	1455	313	203	112	204	302	283	38
23	„ 10	60·7	77·0	46·6	1491	361	212	104	204	278	284	48
24	„ 17	65·9	88·8	49·2	1581	431	255	118	186	259	284	48
25	„ 24	61·6	91·0	48·2	1866	577	260	142	196	322	304	65
26	July 1	62·3	81·8	47·8	1831	670	242	119	193	286	261	60
27	July 8	68·6	89·9	52·7	1847	664	271	119	207	283	245	58
28	„ 15	60·5	76·6	47·1	1887	699	289	125	213	266	242	53
29	„ 22	61·8	76·4	51·5	1855	693	298	124	184	260	238	58
30	„ 29	62·4	77·9	47·5	1729	592	238	139	190	278	239	53
31	August 5	60·2	72·7	48·6	1715	527	272	120	212	276	264	44
32	„ 12	67·8	83·7	48·5	1617	437	258	108	189	284	278	62
33	„ 19	73·6	95·1	57·2	1855	548	293	150	224	289	282	69
34	„ 26	63·0	82·0	47·5	1718	511	271	115	212	282	251	76
35	September 2	59·4	76·0	43·2	1566	473	236	96	198	283	227	54
36	„ 9	61·4	82·8	45·7	1560	440	247	107	211	272	226	57
37	„ 16	58·1	77·9	39·4	1441	412	225	101	165	239	248	51
38	„ 23	53·8	67·9	39·3	1561	410	228	140	194	296	240	53
39	„ 30	54·2	68·1	37·5	1656	436	252	129	204	291	287	57
40	October 7	52·7	65·8	43·8	1481	351	222	121	197	260	271	59
41	„ 14	52·6	65·3	38·5	1477	332	228	118	219	247	276	57
42	„ 21	55·0	66·7	38·9	1554	356	243	150	238	267	257	43
43	„ 28	49·3	57·9	38·4	1487	333	225	118	228	263	275	45
44	November 4	44·9	60·0	27·4	1695	412	265	129	239	290	311	49
45	„ 11	40·3	49·3	32·2	1769	423	319	173	207	269	316	62
46	„ 18	41·1	59·3	30·9	2016	459	363	144	272	308	399	71
47	„ 25	39·2	50·8	28·4	2190	480	348	136	287	372	454	113
48	December 2	40·9	52·6	24·5	2235	511	342	130	235	368	478	121
49	„ 9	40·9	50·1	20·2	2356	527	333	149	329	465	568	135
50	„ 16	43·7	56·3	32·1	2400	483	372	157	253	446	556	133
51	„ 23	41·7	50·1	34·3	2170	459	338	118	261	366	503	125
52	„ 30	40·3	47·8	27·8	1920	401	315	136	254	325	414	75

TABLE 20.—Deaths in 207 Public Institutions,

	DEATHS.		
	Total.	Males.	Females.
TOTAL DEATHS IN 207 PUBLIC INSTITUTIONS	24598	13894	10704
70 WORKHOUSES AND WORKHOUSE INFIRMARIES -	12020	6682	5338
10 METROPOLITAN ASYLUM HOSPITALS - - -	2163	1078	1085
61 GENERAL HOSPITALS - - - - - -	7518	4475	3043
34 HOSPITALS FOR SPECIAL DISEASES - - -	832	464	368
7 LYING-IN HOSPITALS - - - { *Women* -	11	-	11
{ *Children* -	77	44	33
6 MILITARY AND NAVAL HOSPITALS - - -	174	166	8
3 HOSPITALS FOR FOREIGNERS - - - -	182	130	52
16 LUNATIC AND IMBECILE ASYLUMS - - -	1621	855	766

PUBLIC INSTITUTIONS.	SUB-DISTRICTS.			
WORKHOUSES AND WORKHOUSE INFIRMARIES.				
Paddington Workhouse -	1*a* ; 1. St. Mary Paddington	36	14	22
Paddington Infirmary -	1*a* ; 1. St. Mary Paddington	164	93	71
Kensington Workhouse -	1*b* ; 1. Kensington Town -	4	3	1
Kensington Infirmary -	1*b* ; 1. Kensington Town -	418	216	202
Marylebone Infirmary -	1*b* ; 1. *Kensington Town* -	456	248	208
Fulham Workhouse -	2 ; 3. Fulham - - -	25	11	14
Fulham Infirmary - -	2 ; 3. Fulham - - -	389	204	185
Chelsea Workhouse -	3 ; 2. Chelsea North -	33	13	20
Chelsea Infirmary - -	3 ; 2. Chelsea North -	232	146	86
St. George's Workhouse -	4 ; 1. Mayfair - - -	5	3	2
St. George's Infirmary -	4 ; 1. Mayfair - - -	371	199	172
St. George's Workhouse (Wallis's Yard) -	4 ; 2. Belgrave - -	12	6	6
Westminster Workhouse	5 ; 1. St. James Westmr.	73	41	32
Marylebone Workhouse -	6 ; 2. Rectory Marylebone	97	48	49
Hampstead Workhouse -	7 ; 1. Hampstead - -	61	33	28
Central London Sick Asylum - - -	8 ; 2. *Tottenham Court* -	218	141	77
Pancras Workhouse -	8 ; 5. Camden Town -	319	145	174
Pancras Infirmary - -	8 ; 6. Kentish Town -	321	183	138
Islington Workhouse (St. John's Road) -	9 ; 1. Upper Holloway -	54	35	19
Islington Infirmary (St. John's Road) -	9 ; 1. Upper Holloway -	588	298	290
Islington Workhouse (Cornwallis Road) -	9 ; 1. Upper Holloway -	9	2	7
Islington Work. Sch. -	9 ; 1. Upper Holloway -	5	-	5
Holborn Infirmary - -	9 ; 1. *Upper Holloway* -	334	212	122
Hackney Workhouse -	10 ; 4. Hackney - -	16	6	10
Hackney Infirmary -	10 ; 4. Hackney - -	477	259	218
City of London Workhouse	10 ; 4. *Hackney* - -	18	9	9
St. Giles Workhouse -	11 ; 2. St. Giles South -	137	89	48
Strand Workhouse - -	12 ; 3. St. Clement Danes -	25	14	11
Strand Infirmary - -	12 ; 3. St. Clement Danes	1	1	-
Strand Workhouse - -	129 ; 3. *Edmonton* - -	96	48	48
Holborn Workhouse -	13 ; 2. St. Andrew Eastern	62	47	15
Holborn Workhouse -	38 ; 2. *Mitcham* - -	83	33	50
City of London Workh. -	14 ; 4. St. Bride - -	9	7	2
Holborn Workhouse -	15 ; 2. *Hoxton New Town* -	257	139	118
Shoreditch Workhouse -	15 ; 4. Haggerston - -	9	5	4
Shoreditch Infirmary -	15 ; 4. Haggerston - -	417	240	177
Bethnal Green Workh. -	16 ; 3. Bethnal Green East	521	301	220
Whitechapel Infirmary -	17 ; 2. Mile End New Town	435	273	162
St. George-in-the-East Casual Ward -	18 ; 2. St. John - -	1	1	-
St. George-in-the-East Workhouse -	18 ; 2. St. John - -	9	6	3
St. George-in-the-East Infirmary - -	18 ; 2. St. John - -	293	164	129
Mile End Workhouse -	20 ; 2. Mile End O. T. East	4	3	1
Mile End Infirmary -	20 ; 2. Mile End O. T. East	298	171	127
Whitechapel Workhouse -	20 ; 2. *Mile End O.T. East*	10	-	10

PUBLIC INSTITUTIONS.	SUB-DISTRICTS.	DEATHS. Total.	Males.	Females.
WORKHOUSES AND WORKHOUSE INFIRMARIES—*continued.*				
City of London Infirmary { *part of* -	20 ; 2. *Mile End O. T. East.*	61	8	53
{ *part of* -	21 ; 2. *Bromley* - - -	101	68	33
Poplar and Stepney Sick Asylum - - - }	21 ; 2. *Bromley* - - -	677	372	305
Stepney W. (Aged & Infirm)	21 ; 2. *Bromley* - - -	102	62	40
Poplar Workhouse - -	21 ; 3. Poplar - - -	107	77	30
St. Saviour's Workhouse	22 ; 1. Christch. Southwrk.	28	28	-
St. Saviour's Workhouse	22 ; 4. Borough Road -	22	14	8
St. Saviour's Workhouse	22 ; 7. St. Peter Walworth	111	50	61
St. Olave's Workhouse -	23 ; 1. St. Olave - -	44	22	22
St. Olave's Workhouse -	23 ; 3. St. Mary Magdalen	18	6	12
St. Olave's Infirmary -	23 ; 5. Rotherhithe - -	326	205	121
Lambeth Workhouse (Princes Road) - -	24 ; 4. Lambeth Church 2nd	1	1	-
Lambeth Workhouse (Renfrew Road) - -	24 ; 4. Lambeth Church 2nd	62	34	28
Lambeth Infirmary (Brook Street) - -	24 ; 4. Lambeth Church 2nd	621	310	311
Lambeth Old Work. Sch.	24 ; 8. Norwood - -	15	8	7
Wandsworth Infirmary -	25 ; 2. West Battersea -	357	189	168
Wandsworth Workhouse	25 ; 4. Wandsworth - -	22	12	10
St. Anne's Home (Pancras Workhouse) - -	25 ; 6. *Streatham* - -	28	28	-
Camberwell Workhouse -	26 ; 2. Camberwell - -	126	59	67
Camberwell Infirmary -	26 ; 2. Camberwell - -	275	171	104
St. Saviour's Infirmary -	26 ; 2. *Camberwell* - -	650	393	257
Camberwell W. (Gordon Road) - - - -	26 ; 3. Peckham - -	81	44	37
Greenwich Workhouse -	27 ; 5. Greenwich East -	125	34	91
Greenwich Infirmary -	27 ; 5. Greenwich East -	339	203	136
Lewisham Workhouse -	28 ; 3. Lewisham - -	115	59	56
Woolwich Workhouse -	29 ; 5. Plumstead East -	3	2	1
Woolwich Infirmary -	29 ; 5. Plumstead East -	191	103	88
METROPOLITAN ASYLUM HOSPITALS.				
Western - - - -	2 ; 3. *Fulham* - - -	272	144	128
North-Western - -	7 ; 1. *Hampstead* - -	510	234	276
Eastern - - - -	10 ; 4. *Hackney* - -	376	193	183
South-Western - -	24 ; 7. *Brixton* - - -	305	148	157
Fountain Hospital - -	25 ; 6. *Streatham* - -	16	8	8
South-Eastern - - -	27 ; 1. *Deptford Central* -	310	151	159
Hospital Ships - -	42 ; 2. *Dartford* - -	176	99	77
Hosp. Camp - - -	42 ; 2. *Dartford* - -	13	6	7
North-Eastern - -	129 ; 2. *Tottenham* - -	145	73	72
Northern - - - -	129 ; 3. *Edmonton* - -	40	22	18
GENERAL HOSPITALS.				
St. Mary's - - -	1*a* ; 2. St. John Paddington	390	224	166
Queen's Jubilee - -	1*b* ; 2. Brompton - -	12	8	4
West London - - -	2 ; 2. St. Paul Hammersm.	152	103	49
St. Camillo's - - -	3 ; 2. Chelsea North -	6	6	-
Victoria (*Children*) - -	3 ; 3. Chelsea South -	131	70	61
Cheyne (*Children*) - -	3 ; 3. Chelsea South -	10	5	5
St. George's - - -	4 ; 2. Belgrave - -	457	282	175
Belgrave (*Children*) -	4 ; 2. Belgrave - -	14	9	5
Westminster - - -	4 ; 4. St. Margaret Westm.	248	158	90
Home Hospital - -	5 ; 2. St. Anne Soho -	1	1	-
All Saints Hospital -	6 ; 1. All Souls Marylebone	1	1	-
Middlesex - - -	6 ; 1. All Souls Marylebone	310	163	147
Ladies' - - - -	6 ; 2. Cavendish Square -	2	-	2
Samaritan Free - -	6 ; 3. St. Mary Marylebone	18	-	18
For Incurables - -	6 ; 5. Christchurch -	1	-	1
St. Peter's Home, Kilburn	7 ; 1. Hampstead - -	20	-	20
Home Hospital - -	7 ; 1. Hampstead - -	9	3	6
For Incurables - -	7 ; 1. Hampstead - -	69	33	36

NOTE.—Institutions in which no deaths occurred during the year are not shown in the Table. The Workhouse Establishments printed in *italics* receive inmates from other Districts than those in which they are situated.

gistered during the 52 Weeks of 1893.

PUBLIC INSTITUTIONS.	SUB-DISTRICTS.	DEATHS. Total.	Males.	Females.
ENERAL HOSPITALS—*continued.*				
. Luke's House	8; 1. Regent's Park	7	3	4
niversity College	8; 2. Tottenham Court	337	197	140
ome Hospital	8; 2. Tottenham Court	10	4	6
yal Free	8; 3. Gray's Inn Lane	194	122	72
mperance	8; 4. Somers Town	73	40	33
rth-West London	8; 5. Camden Town	55	35	20
eat Northern Central	9; 1. Upper Holloway	127	77	50
inifred Ho. (Ch.Conv. Hosp.)	9; 1. Upper Holloway	1	-	1
ldmay Memorial	9; 4. Highbury	19	13	6
valid Home	9; 4. Highbury	2	1	1
valid Asylum	10; 1. Stoke Newington	2	-	2
tropolitan Free	10; 3. West Hackney	125	78	47
wish Home for Incur.	10; 5. South Hackney	4	1	3
aring Cross	12; 1. St. Martin in-the-Fields	186	131	55
ng's College	12; 3. St. Clement Danes	247	165	82
ndon Homœopathic	13; 1. St. George the Martyr	29	11	18
. John and St. Eliza-beth	13; 1. St. George the Martyr	27	-	27
r Children	13; 1. St. George the Martyr	250	140	110
ty Police	14; 1. St. Botolph	6	6	-
. Bartholomew's	14; 3. St. Sepulchre	802	512	290
nvent	15; 1. Shoreditch South	7	3	4
rth-Eastern (*Children*)	15; 4. Haggerston	111	64	47
ldmay Medical Mission	16; 1. Bethnal Green N.	35	17	18
ndon	17; 3. Whitechapel Church	1165	725	440
st London (*Children*)	19; 1. Shadwell	320	175	145
plar	21; 2. Bromley	25	20	5
elina (*Children*)	22; 4. Borough Road	169	90	79
y's	23; 1. St. Olave	552	336	216
yal Infirmary (*Women and Children*)	24; 1. Waterloo 1st	53	24	29
. Thomas's	24; 3. Lambeth Church 1st	616	377	239
olingbroke House Hosp.	25; 2. West Battersea	6	1	5
itish Home for Incurables	25; 3. Clapham	7	3	4
e Hostel of God	25; 3. Clapham	11	3	8
yal, for Incurables	25; 4. Wandsworth	9	2	7
ttage Home	25; 4. Wandsworth	1	-	1
iller Hospital	27; 4. Greenwich West	24	12	12
ttage Hospital	28; 1. Eltham	3	-	3
. John's	28; 2. Lee	17	5	12
ard of Works Hospital	28; 3. Lewisham	1	1	-
me for Sick Children	28; 4. Sydenham	14	7	7
ttage Hospital	29; 1. Charlton	7	4	3
ttage Hospital	29; 3. Woolwich Arsenal	10	3	7
nvalescent Home	29; 5. Plumstead, East	1	1	-
HOSPITALS FOR SPECIAL DISEASES.				
ck Hospital	1a; 1. St. Mary Paddington	2	-	2
nsumption & Diseases of Chest	1b; 2. Brompton	136	77	59
	3; 2. Chelsea North	164	123	41
ncer	3; 2. Chelsea North	96	29	67
r Women	3; 2. Chelsea North	36	1	35
rosvenor (*Wom.&Childn.*)	4; 3. St. John Westminst.	4	1	3
seases of Throat	5; 1. St. James Westm.	6	5	1
spital for Paralysis	5; 1. St. James, Westm.	1	1	-
r Women	5; 2. St. Anne Soho	16	1	15
art Diseases	5; 2. St. Anne Soho	5	3	2
le Lock Hospital	5; 2. St. Anne Soho	1	1	-
st End Hospital (*Par.*)	6; 1. All Souls, Maryleb.	2	1	1
. Agnes (*Consumption*)	6; 1. All Souls Maryleb.	-	-	-
ndon Throat	6; 1. All Souls, Maryleb.	3	3	-
thopœdic	6; 1. All Souls Maryleb.	1	1	-
Marylebone Sanatorium	6; 2. Rectory	25	14	11

PUBLIC INSTITUTIONS.	SUB-DISTRICTS.	DEATHS. Total.	Males.	Females.
HOSPITALS FOR SPECIAL DISEASES—*continued.*				
Home for Consump. Fem.	6; 3. St. Mary Maryleb.	5	-	5
Epilepsy, &c.	6; 6. St. John Maryleb.	2	1	1
North London Consumpn.	7; 1. Hampstead	29	25	4
St. Saviour's (*Cancer*)	8; 1. Regent's Park	7	-	7
Central London Throat and Ear	8; 3. Gray's Inn Lane	6	4	2
Central Lond. Ophthalmic	8; 3. Gray's Inn Lane	2	1	1
For Women	8; 4. Somers Town	22	-	22
Small pox	9; 1. Upper Holloway	10	8	2
London Fever	9; 2. Islington South-west	17	11	6
Royal Westm. Ophthal.	12; 1. St. Martins-in-the Fields	1	1	-
St. Peter's (*Stone, &c.*)	12; 2. St. Mary-le-Strand	12	11	1
National (*Par. & Epil.*)	13; 1. St. George the Martyr	40	21	19
Alexandra (*Hip Diseases*)	13; 1. St. George the Martyr	5	3	2
St. Mark's (*Fistula*)	13; 7. City Road	5	4	1
Royal, for Dis. of Chest	13; 7. City Road	53	33	20
Royal London Ophthalmic	14; 6. Broad Street	1	1	-
City of London for Chest Dis.	16; 3. Bethnal Green East	114	77	37
Royal Eye Hospital	22; 5. London Road	1	1	-
Infectious Dis. Hosp. Hither Green	28; 3. Lewisham	2	1	1
LYING-IN HOSPITALS.				
St. John the Divine	3; 2. Chelsea North — Women	1	-	1
	Children	5	3	2
Queen Charlotte's	6; 3. St. Mary, Marylebone — Women	5	-	5
	Children	21	15	6
British	11; 2. St. Giles South — Women	1	-	1
	Children	3	-	3
City of London	13; 7. City Road — Women	1	-	1
	Children	15	8	7
East End Mothers' Home	20; 1. Mile End O.T. W. — Women	1	-	1
	Children	10	3	7
General (York Road)	24; 2. Waterloo 2nd — Women	2	-	2
	Children	17	12	5
Clapham Maternity	24; 5. Kenning-ton 1st — Women	-	-	-
	Children	6	3	3
MILITARY AND NAVAL HOSPITALS.				
Station Hospitals	4; 3. St. John Westminster	17	17	-
Seamen's	27; 5. Greenwich East	114	107	7
Herbert	29; 1. Charlton	36	36	-
Garrison Female	29; 3. Woolwich Arsenal	5	4	1
Arsenal Infirmary	29; 3. Woolwich Arsenal	1	1	-
Auxiliary Hospital	29; 3. Woolwich, Arsenal	1	1	-
HOSPITALS FOR FOREIGNERS.				
German	10; 4. Hackney	136	99	37
French	11; 3. St. Giles North	36	24	12
Italian	13; 1. St. George the Martyr	10	7	3
LUNATIC ASYLUMS.*				
St. Luke's Hospital	13; 8. City Road	10	6	4
Hoxton House *	15; 1. Shoreditch South	61	32	29
Bethnal House *	16; 3. Bethnal Green East	52	21	31
Grove Hall *	21; 1. Bow	40	33	7
Bethlehem Hospital	22; 5. London Road	28	17	11
Peckham House *	26; 2. Camberwell	30	12	18
Camberwell House *	26; 2. Camberwell	41	24	17
Lond. Co. Asyl., Banstead	30; 1. Carshalton	166	87	79
Metrop. Asyl., Caterham	37; 1. Godstone	137	72	65
Lond. Co. Asyl., Cane Hill	38; 1. Croydon	184	98	86
Metrop. Asyl., Darenth	42; 2. Dartford	159	68	91
City of Lond. Asyl., Stone	42; 2. Dartford	25	18	7
Lond. Co. Asyl., Hanwell	125; 3. Hayes	144	76	68
Lond. Co. Asyl., Colney Hatch	128; 3. Finchley	233	119	114
Metrop. Asyl., Leavesden	137; 2. Watford	201	115	86
Metro. Asylum, Claybury	189; 2. Ilford	110	57	53

* Lunatic Asylums.—Private Lunatic Asylums are excluded from this list, except those in which *pauper* lunatics are received, which are marked thus *.

TABLE **21.** LONDON.—**Weekly Deaths** from the principal ZYMOTIC DISEASES during the Four Fifty Years

	SMALL-POX.				MEASLES.				SCARLET FEVER.				DIPHTHERIA.			
	1890	1891	1892	1893	1890	1891	1892	1893	1890	1891	1892	1893	1890	1891	1892	1893
YEAR	4	8	41	206	3291	1807	3393	1661	876	589	1174	1596	1417	1361	1885	3265
March Quar.	1	3	7	38	338	452	826	317	185	168	159	335	337	355	328	639
June „	2	4	21	100	982	473	1610	439	168	122	261	336	278	311	437	677
Sept. „	1	1	6	49	937	248	575	459	227	130	365	458	308	330	487	860
Dec. „	–	–	4	19	1034	634	382	446	296	169	389	467	494	365	633	1089
Week.																
1	–	–	–	–	36	76	82	44	15	16	17	32	32	28	25	47
2	–	–	1	2	24	45	83	40	13	24	9	35	26	23	29	61
3	–	–	–	1	24	38	76	39	22	13	13	26	22	17	23	37
4	–	–	–	–	21	27	60	26	10	11	9	35	22	25	24	53
5	–	–	–	5	11	15	39	12	14	22	14	30	24	34	27	43
6	–	–	–	1	8	20	29	15	19	9	14	19	24	29	18	62
7	–	–	–	–	21	24	47	15	14	13	11	26	39	34	15	60
8	1	–	–	4	14	24	68	21	13	11	16	19	27	33	30	51
9	–	1	–	5	19	30	52	20	14	13	10	21	24	31	27	37
10	–	–	2	6	35	32	54	20	12	10	4	15	19	18	34	38
11	–	–	2	3	35	44	82	21	18	5	12	30	25	33	31	65
12	–	–	–	6	45	32	73	14	11	12	13	17	23	26	30	49
13	–	2	2	5	45	45	81	30	10	9	17	30	30	24	15	36
14	–	–	2	2	35	38	102	23	8	11	19	19	20	26	34	38
15	–	–	–	3	54	48	113	24	12	11	14	18	21	26	33	44
16	–	–	2	9	65	51	127	44	13	6	17	24	17	23	29	47
17	–	–	2	6	61	38	156	34	17	10	19	28	20	23	17	50
18	1	–	1	11	67	38	158	26	15	9	20	21	18	24	31	54
19	–	–	3	13	62	35	136	20	12	6	25	15	25	19	24	68
20	–	–	4	4	70	41	140	32	17	10	13	26	21	21	42	51
21	1	1	1	16	94	41	122	35	15	10	23	29	24	27	39	41
22	–	1	3	9	83	42	120	29	14	7	12	27	25	24	40	51
23	–	1	–	7	91	34	132	38	12	7	21	24	20	21	37	39
24	–	1	1	6	100	18	111	45	11	15	29	38	24	28	34	62
25	–	–	1	11	99	23	100	48	15	8	28	29	19	31	39	68
26	–	–	4	3	101	26	93	41	7	12	21	38	24	18	38	64
27	–	1	1	9	100	31	83	52	13	10	21	35	21	21	30	54
28	–	–	–	4	99	30	74	56	20	7	23	34	22	25	43	52
29	–	–	4	10	104	26	77	53	12	10	20	36	19	26	37	66
30	–	–	1	8	94	21	67	36	13	10	24	36	20	30	25	72
31	–	–	–	3	82	29	64	42	19	5	33	44	36	24	42	64
32	–	–	–	2	95	17	56	43	17	6	21	26	22	22	35	63
33	–	–	–	3	80	20	36	55	27	13	33	48	15	24	37	63
34	–	–	–	3	73	17	42	30	16	11	28	33	20	24	38	56
35	–	–	–	2	60	10	21	31	24	5	38	30	26	24	34	56
36	–	–	–	–	56	11	18	23	18	15	34	36	16	17	37	65
37	–	–	–	1	39	12	17	18	18	15	31	25	18	32	36	65
38	–	–	–	2	33	9	8	6	14	10	27	34	35	29	43	88
39	1	–	–	2	22	15	12	14	16	13	32	41	38	32	50	96
40	–	–	–	1	30	17	16	18	20	10	33	39	28	29	51	74
41	–	–	–	2	38	18	20	22	20	13	24	34	38	25	46	86
42	–	–	–	–	59	19	28	20	20	10	28	40	41	29	41	84
43	–	–	–	2	70	18	22	16	29	9	39	33	23	30	56	83
44	–	–	–	1	95	31	32	33	16	13	36	43	26	25	47	88
45	–	–	–	2	74	37	29	42	23	8	32	47	50	24	51	103
46	–	–	–	1	63	49	30	48	15	13	32	37	29	30	29	91
47	–	–	1	3	76	53	28	31	26	15	29	42	37	26	46	90
48	–	–	2	–	76	64	35	39	27	19	31	34	48	27	39	74
49	–	–	–	4	91	45	30	34	23	20	23	30	41	33	58	89
50	–	–	1	2	92	46	31	45	30	8	35	29	45	30	59	85
51	–	–	–	1	100	83	32	49	14	17	25	32	32	20	60	63
52	–	–	–	–	84	154	49	49	14	14	22	27	31	37	59	79
53	–	–	–	–	86	–	–	–	19	–	–	–	25	–	–	–

rs 1890–1893; and the AVERAGE WEEKLY Numbers from these DISEASES during the 4–1893.

OOPING-COUGH.			FEVER.				DIARRHŒA.				WEEKLY AVERAGE in 50 Years, 1844-93.							
) 1891	1892	1893	1890	1891	1892	1893	1890	1891	1892	1893	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhœa.	
2876	2477	2330	662	597	467	719	2753	2437	2546	3446	17	35	* 42	* 16	48	34	53	YEAR.
700	1473	531	115	106	80	105	147	173	211	206	20	32	34	14	66	33	14	March Qr.
759	630	592	95	144	90	122	212	218	326	757	21	40	29	14	56	30	21	June „
574	204	619	175	127	130	219	1886	1674	1747	2186	12	29	44	15	33	33	154	Sept. „
843	170	588	277	220	167	273	508	372	262	297	13	38	60	20	36	39	25	Dec. „
																		Week.
76	153	34	12	10	3	11	10	13	13	13	19	46	44	15	59	36	13	1
46	166	37	12	6	17	10	12	12	30	8	20	42	43	15	60	36	14	2
58	170	34	15	7	7	8	6	16	16	15	21	37	43	13	64	35	14	3
58	155	18	11	11	5	4	15	19	10	21	20	31	38	14	69	34	14	4
37	137	36	9	8	6	10	9	11	17	14	22	28	35	15	70	34	14	5
39	104	39	2	9	4	4	4	13	14	16	21	25	34	15	70	33	14	6
45	100	42	13	6	4	7	8	10	19	14	20	24	32	15	67	34	14	7
61	69	45	9	7	7	9	21	19	17	21	20	28	33	14	66	32	14	8
68	67	38	8	4	5	12	12	10	16	17	20	27	31	13	65	30	15	9
55	89	28	5	9	6	11	9	15	20	20	19	30	30	12	65	33	14	10
48	91	46	4	13	9	5	14	15	14	18	18	32	27	15	66	33	13	11
48	92	73	7	8	3	7	14	9	12	20	18	33	26	13	69	31	14	12
61	80	61	8	8	4	7	13	11	13	9	19	35	29	13	72	33	13	13
61	65	53	3	12	10	6	10	11	13	14	20	37	26	13	68	31	13	14
46	66	49	5	8	5	8	10	16	17	15	21	38	27	15	68	32	13	15
54	66	60	9	13	6	7	11	15	24	14	22	39	28	13	67	32	14	16
72	59	49	7	10	5	9	13	14	14	8	21	40	27	14	63	31	13	17
74	59	43	7	14	8	13	21	17	18	21	22	40	29	13	61	31	14	18
69	66	37	3	15	7	7	11	12	9	29	21	40	28	14	60	28	13	19
53	45	44	10	9	10	5	17	7	13	25	23	41	28	13	58	30	14	20
70	45	36	6	8	6	9	10	18	16	30	23	41	31	13	57	30	15	21
64	34	35	4	10	8	8	10	14	25	28	20	43	31	14	52	29	17	22
56	31	31	9	7	4	8	8	12	28	70	21	43	32	14	48	29	20	23
44	39	47	13	21	9	8	16	19	39	96	20	42	30	14	45	30	27	24
55	26	52	7	6	5	16	24	25	51	188	20	41	32	15	44	29	39	25
41	29	56	12	11	7	18	51	38	59	219	19	40	32	14	43	30	55	26
51	24	49	8	6	7	13	85	44	108	219	17	40	34	14	41	30	89	27
48	27	56	10	7	9	16	107	94	171	264	15	37	36	14	41	31	143	28
33	26	50	7	6	8	9	111	159	192	272	15	36	37	14	41	30	193	29
43	23	54	2	14	5	15	108	253	158	190	14	35	39	15	39	32	231	30
38	16	64	12	9	7	24	177	247	125	162	12	34	39	15	35	30	222	31
52	14	39	12	4	11	15	176	195	128	135	12	31	41	14	34	32	205	32
44	13	49	17	7	7	30	262	167	148	153	12	30	41	14	30	33	191	33
48	13	29	11	11	9	20	255	127	158	190	12	27	44	15	30	33	173	34
40	9	42	17	10	4	14	180	88	165	172	11	24	45	15	29	34	152	35
44	9	47	19	6	10	15	128	83	158	129	11	21	49	14	29	35	132	36
54	12	50	19	13	20	11	117	66	109	118	10	19	50	16	28	37	108	37
55	12	45	21	17	17	28	94	84	65	95	11	18	51	19	27	38	88	38
24	6	45	20	17	16	14	86	67	62	87	9	18	60	19	25	38	74	39
40	11	32	25	17	15	10	105	65	40	52	11	21	62	19	26	38	57	40
34	5	24	25	22	12	21	94	49	32	40	11	24	63	19	24	39	47	41
43	2	35	23	22	13	19	75	44	33	44	10	27	65	20	26	40	38	42
28	7	28	16	17	18	19	55	31	20	27	11	28	67	18	26	41	30	43
36	10	28	26	19	10	18	43	36	30	23	11	33	67	17	29	41	25	44
57	10	37	29	15	9	17	26	21	13	7	13	36	64	20	30	39	21	45
60	15	44	25	13	16	21	19	21	14	22	14	39	64	19	34	41	20	46
60	12	45	23	20	13	26	11	15	11	15	13	42	63	21	36	41	17	47
76	8	48	14	17	11	25	16	25	11	11	15	46	61	19	38	40	16	48
56	17	59	17	17	11	34	4	14	17	11	15	47	56	21	43	41	15	49
71	22	67	13	19	15	21	12	15	17	23	17	47	56	20	46	40	15	50
93	20	74	16	10	10	24	13	11	11	15	17	51	49	19	51	38	14	51
180	31	67	11	12	14	18	15	25	13	7	17	49	47	19	56	35	14	52
–	–	–	14	–	–	–	20	–	–	–	–	–	–	–	–	–	–	53

* The weekly averages for scarlet fever and diphtheria relate to the 34 years 1860-93.

TABLE 22.—**Births** and **Deaths** Registered in **London**, and **Meteorology** at **Greenwich**, in each Week of 1893.

No. of Week.	Week ending	Births. Total.	Males.	Femls.	Deaths. Total.	Males.	Femls	Mean Temperature of the Air.	Mean of the Highest Readings of the Thermometer.	Mean of the Lowest Readings of the Thermometer.	Degree of Humidity (complete saturation = 100).	Fall of Rain in Inches.	Mean Hourly Amount of Horizontal Movement of the Air in each Week.	Sun above Horizon in Hours.	Registered Sunshine in Hours.
	1893.							°	°	°	°		Miles.		
1	Jan. 7	2577	1311	1266	2509	1221	1288	25·5	29·6	20·2	85	0·10	7·5	55·5	1·9
2	„ 14	2715	1375	1340	2503	1193	1310	35·1	37·3	32·6	88	0·55	11·3	56·9	4·1
3	„ 21	2645	1330	1315	2101	1037	1064	35·0	39·7	30·0	86	0·45	11·5	58·7	3·0
4	„ 28	2758	1444	1314	1831	939	892	41·2	45·2	37·1	91	0·20	12·0	61·1	4·5
5	Feb. 4	2768	1393	1375	1673	852	821	44·5	49·2	39·9	88	0·54	14·9	63·7	9·3
6	„ 11	2884	1468	1416	1579	757	822	40·5	47·7	33·2	86	0·25	17·3	66·5	17·3
7	„ 18	2762	1399	1363	1556	767	789	43·7	49·9	37·2	87	0·28	17·0	69·6	5·6
8	„ 25	2527	1265	1262	1629	857	772	39·3	44·3	35·7	86	1·01	12·8	72·8	10·2
9	March 4	2783	1416	1367	1718	850	868	43·8	50·7	38·2	86	1·09	14·8	76·0	12·4
10	„ 11	2769	1392	1377	1576	805	771	46·7	55·6	38·0	78	0·00	11·2	79·1	14·6
11	„ 18	2656	1314	1342	1578	799	779	45·5	53·9	38·3	75	0·11	15·7	82·4	27·5
12	„ 25	2729	1373	1356	1708	877	831	43·9	57·8	30·8	72	0·00	5·0	85·6	55·4
13	April 1	2553	1276	1277	1732	918	814	49·3	63·5	33·9	60	0·00	7·6	88·9	63·6
14	April 8	2566	1275	1291	1683	884	799	48·4	60·1	38·9	78	0·00	10·1	92·2	54·6
15	„ 15	2667	1313	1354	1681	894	787	45·3	56·8	35·1	70	0·00	11·2	95·3	44·6
16	„ 22	2660	1357	1303	1730	872	858	55·4	68·8	42·3	63	0·10	8·4	98·4	48·3
17	„ 29	2582	1318	1264	1570	857	713	56·0	70·6	42·4	61	0·02	8·4	101·4	65·9
18	May 6	2625	1338	1287	1576	805	771	55·0	68·5	43·3	64	0·01	10·5	104·2	41·1
19	„ 13	2532	1290	1242	1460	779	681	57·8	72·8	43·0	57	0·00	12·7	106·9	77·1
20	„ 20	2445	1267	1178	1503	796	707	59·3	72·1	49·1	76	0·37	10·0	109·4	29·4
21	„ 27	2242	1152	1090	1459	758	701	58·7	69·4	48·9	65	0·02	9·4	111·7	34·0
22	June 3	2643	1346	1297	1455	785	670	55·7	68·0	43·1	67	0·14	6·6	113·4	31·9
23	„ 10	2582	1324	1258	1491	806	685	60·7	74·5	50·1	66	0·19	8·9	114·8	46·2
24	„ 17	2474	1272	1202	1581	829	752	65·9	80·6	52·8	58	0·00	8·2	115·6	67·3
25	„ 24	2520	1291	1229	1866	1015	851	61·6	74·4	50·4	66	0·39	10·6	116·2	34·4
26	July 1	2479	1260	1219	1831	978	853	62·3	75·2	51·7	71	0·25	11·7	115·6	38·6
27	July 8	2220	1096	1124	1847	969	878	68·6	83·6	55·5	62	0·38	8·4	114·7	56·0
28	„ 15	2607	1339	1268	1887	1006	881	60·5	69·5	53·8	78	1·64	7·5	113·4	21·0
29	„ 22	2498	1280	1218	1855	1000	855	61·8	71·5	54·9	76	0·51	11·6	111·7	23·3
30	„ 29	2497	1275	1222	1729	894	835	62·4	73·2	54·3	70	0·50	10·9	109·6	25·7
31	August 5	2570	1359	1211	1715	913	802	60·2	70·5	53·2	76	0·92	13·1	107·0	24·7
32	„ 12	2320	1184	1136	1617	822	795	67·8	80·8	57·2	73	0·18	8·5	104·4	47·7
33	„ 19	2560	1329	1231	1855	935	920	73·6	88·8	59·8	58	0·00	7·8	101·5	64·0
34	„ 26	2571	1306	1265	1718	901	817	63·0	73·8	53·8	70	0·34	13·6	98·5	42·7
35	Sept. 2	2616	1325	1291	1566	821	745	59·4	69·8	51·1	76	0·25	6·5	95·5	17·2
36	„ 9	2556	1327	1229	1560	796	764	61·4	73·9	50·9	68	0·27	10·0	92·2	45·2
37	„ 16	2635	1350	1285	1441	728	713	58·1	70·0	46·7	71	0·24	8·8	89·2	42·9
38	„ 23	2554	1299	1255	1561	802	759	53·8	62·5	47·1	76	0·12	11·7	86·0	18·2
39	„ 30	2633	1377	1256	1656	855	801	54·2	64·0	46·3	80	0·53	13·4	82·6	21·0
40	October 7	2513	1292	1221	1481	740	741	52·7	62·4	45·0	76	0·60	10·6	79·6	42·4
41	„ 14	2434	1250	1184	1477	742	735	52·6	61·5	45·3	84	2·20	10·7	76·4	23·0
42	„ 21	2559	1248	1311	1554	808	746	55·0	62·1	48·9	84	1·04	10·5	73·3	17·1
43	„ 28	2590	1293	1297	1487	762	725	49·3	55·6	42·7	78	0·30	12·8	70·2	11·0
44	Nov. 4	2452	1253	1199	1695	853	842	44·9	52·2	37·6	83	0·32	11·6	67·2	13·1
45	„ 11	2659	1378	1281	1769	901	868	40·3	45·1	35·1	80	0·02	13·6	64·3	10·9
46	„ 18	2430	1260	1170	2016	1016	1000	41·1	46·5	35·4	88	1·01	11·6	61·8	13·6
47	„ 25	2529	1317	1212	2190	1102	1088	39·2	43·9	34·4	82	0·22	18·9	59·3	4·9
48	Dec. 2	2405	1199	1206	2235	1150	1085	40·9	47·0	35·8	83	0·38	14·6	57·2	4·6
49	„ 9	2466	1246	1220	2556	1263	1293	40·9	46·0	34·4	83	0·36	13·1	55·7	6·7
50	„ 16	2474	1264	1210	2400	1165	1235	43·7	49·7	35·0	84	0·86	16·4	54·7	2·5
51	„ 23	2378	1217	1161	2170	1069	1101	41·7	46·6	36·4	89	0·69	15·1	53·9	8·2
52	„ 30	2106	1063	1043	1920	910	1010	40·3	44·6	35·6	90	0·16	8·3	54·4	3·6

TABLE 23.—**Greenwich Meteorological Elements** for the Year 1893. By J. GLAISHER, Esq., F.R.S.

1893. Months.	Mean Reading of the Barometer.	Temperature of the Air. Highest by Day.	Lowest by Night.	Range in Month.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean for the Month.	Departure from Average of 122 Years, 1771–1892.	Mean Temperature of the Dew Point.	Mean Elastic Force of Vapour.	Weight of Vapour in a Cubic Foot of Air.	Mean additional Weight required for Saturation.	Mean Degree of Humidity. Saturation = 100.	Mean Weight of a Cubic Foot of Air.	Relative Proportion of Wind. N.	E.	S.	W.	Mean Amount of Cloud.	Rain. Number of Days it fell.	Amount collected.
	in.	°	°	°	°	°	°	°	°	°	in.	grs.	grs.		grs.							in.
January–	29·885	52·2	13·9	38·3	39·3	31·2	8·1	35·3	−1·2	32·1	·182	2·1	0·3	90	560	8	6	8	9	7·9	15	1·45
February	29·542	58·8	28·1	30·7	47·2	35·7	11·5	41·1	+2·3	37·3	·223	2·6	0·4	87	547	5	4	10	9	6·9	22	2·72
March –	29·964	66·3	24·2	45·	56·9	35·9	21·0	46·2	+5·2	37·9	·228	2·6	1·0	74	549	7	8	8	8	4·0	7	0·43
April –	29·910	80·0	30·2	49·8	64·2	39·6	24·6	51·4	+5·3	40·2	·249	2·8	1·5	65	543	7	17	4	2	3·1	3	0·12
May –	29·888	80·4	38·0	42·4	70·6	43·1	24·5	57·7	+5·2	46·1	·312	3·5	1·8	66	534	9	8	7	7	5·7	9	0·53
June –	29·838	91·0	47·3	53·7	75·3	50·1	25·2	61·8	+3·5	49·5	·355	4·0	2·2	64	529	7	12	5	6	4·8	8	0·82
July –	29·732	89·9	47·1	42·8	74·3	54·4	19·9	63·1	+1·5	53·5	·410	4·6	1·9	71	526	5	7	9	10	6·5	18	3·33
August –	29·880	95·1	43·2	51·9	77·7	55·2	22·5	65·8	+1·6	54·8	·430	4·7	2·2	69	525	4	4	12	11	4·8	11	1·25
September	29·694	82·8	37·5	45·3	67·7	48·2	19·5	57·1	+0·5	48·7	·341	3·8	1·4	73	532	5	6	9	10	5·8	14	1·29
October –	29·745	66·7	30·2	36·5	59·3	44·6	14·7	51·5	+2·1	45·4	·304	3·4	0·8	80	549	5	2	12	12	5·6	15	4·16
November	29·807	60·0	27·4	32·6	47·1	36·2	10·9	41·8	−0·7	37·3	·273	2·6	0·5	85	551	10	6	7	7	8·0	16	1·84
December	29·831	56·3	20·2	36·1	45·9	34·4	11·5	40·6	+1·6	36·6	·217	2·5	0·4	86	552	3	3	16	9	5·9	16	2·19
Means	29·815	73·5	31·0	42·5	60·5	42·6	17·8	51·1	+2·5	43·3	·290	3·3	1·2	76	541	75	83 Sums.	107	100	5·7	154 Sum	20·13 Sum

TABLE 24.—METEOROLOGICAL TABLE FOR LONDON, 1893.

(Deduced from Observations, at Greenwich, under the Superintendence of the Astronomer Royal, and compiled from Quarterly Tables, furnished to the Registrar General by James Glaisher, Esq., F.R.S.)

Winter . . Jan., Feb., March.
Spring . . April, May, June.
Summer . . July, Aug., Sept.
Autumn . . Oct., Nov., Dec.

	Temperature of Air. Mean.	Air. Diff. from Average of 122 Years.	Air. Diff. from Average of 52 Years.	Evaporation. Mean.	Evaporation. Diff. from Average of 52 Years.	Dew Point. Mean.	Dew Point. Diff. from Average of 52 Years.	Air—Daily Range. Mean.	Air—Daily Range. Diff. from Average of 52 Years.	Elastic Force of Vapour. Mean.	Elastic Force of Vapour. Diff. from Average of 52 Years.	Weight of Vapour in a Cubic Foot of Air. Mean.	Weight of Vapour in a Cubic Foot of Air. Diff. from Average of 52 Years.	Degree of Humidity. Mean (Sat^{n} =100).	Degree of Humidity. Diff. from Average of 52 Years.	Reading of Barometer. Mean.	Reading of Barometer. Diff. from Average of 52 Years.	Weight of a Cubic Foot of Air. Mean.	Weight of a Cubic Foot of Air. Diff. from Average of 52 Years.	Rain. Amount.	Rain. Diff. from Average of 78 Years.	Reading of Thermometer on Grass. Number of Nights it was: At or below 30°.	Between 30° and 40°.	Above 40°.	Lowest Reading at Night.	Highest Reading at Night.
1893.	°	°	°	°	°	°	°	°	°	in.	in.	grs.	gr.			ins.	in.	grs.	grs.	Sums. ins.	Sums. ins.	Sums.			°	°
YEAR .	51·1	+2·5	+1·9	47·1	+0·8	43·3	−0·2	17 8	+2·3	·290	−·004	3·3	-0·2	76	−7	29·815	+·042	541	−1	20·13	−4·98	79	154	132	13·9	58·1
Winter Quarter .	40·9	+2·1	+1·2	38·6	+0·8	35·8	+0·6	13·5	+1·8	·211	+·005	2·4	0·0	84	−1	29·797	+·025	552	0	4·60	−0·35	37	47	6	13·9	43·1
Spring do. .	57·0	+4·7	+4·2	50·9	+1·9	45·3	0·0	24·8	+4·8	·305	−·002	3·4	−0·1	65	−13	29·905	+·126	535	−3	1·47	−4·31	8	44	39	24·7	52·0
Summer do. .	61·9	+2·2	+1·8	56·7	+0·4	52·3	−0·7	20·6	+1·0	·395	−·009	4·4	−0·2	71	−7	29·764	−·029	528	−2	5·87	−1·44	1	16	75	29·0	58·1
Autumn do. .	44·6	+1·0	+0·4	42·3	−0·1	39·8	−0·7	12·4	+1·7	·248	−·009	2·8	−0·3	84	−6	29·794	+·045	547	0	8·19	+1·12	33	47	12	17·1	55·0

In this Table + and − respectively signify that the number in the *preceding* column is *above* or *below* the average to the amount of the quantities to which these signs are affixed.

TABLE 25.—**Number of Services,** and **Average Daily Quantity of Water** DELIVERED by the **London Water Companies** in each MONTH of the Year 1893.

COMPANIES.	NUMBER OF SERVICES IN											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total Services - - -	790,726	791,308	792,467	793,505	794,555	795,436	796,127	797,028	798,253	799,313	799,850	800,565
FROM THAMES - - - -	381,722	382,011	382,716	383,150	383,700	384,394	384,791	385,154	385,949	386,445	386,446	386,688
FROM LEA AND FROM OTHER SOURCES -	409,004	409,297	409,751	410,355	410,855	411,042	411,336	411,874	412,304	412,868	413,404	413,877
FROM THAMES.												
CHELSEA - - - - - -	36,548	36,552	36,578	36,587	36,602	36,632	36,665	36,680	36,701	36,740	36,761	36,752
WEST MIDDLESEX - - -	76,191	76,191	76,342	76,390	76,504	76,727	76,727	76,734	77,019	77,153	77,153	77,197
SOUTHWARK AND VAUXHALL - -	114,958	115,044	115,235	115,309	115,443	115,548	115,663	115,734	115,874	115,934	116,011	116,082
GRAND JUNCTION - - -	58,385	58,429	58,514	58,603	58,644	58,705	58,770	58,848	58,956	59,009	58,743	58,771
LAMBETH - - - - -	95,640	95,795	96,047	96,261	96,507	96,782	96,966	97,158	97,399	97,609	97,778	97,886
FROM LEA AND FROM OTHER SOURCES.												
NEW RIVER - - - - -	156,153	156,187	156,199	156,417	156,485	156,531	156,793	156,901	156,965	157,043	157,125	157,401
EAST LONDON - - - - -	174,396	174,583	174,913	175,198	175,499	175,499	175,287	175,599	175,924	176,224	176,416	176,416
KENT - - - - - -	78,455	78,527	78,639	78,740	78,871	79,012	79,256	79,374	79,415	79,601	79,863	80,060

COMPANIES.	AVERAGE DAILY SUPPLY OF WATER IN GALLONS DURING THE MONTHS OF											
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total Quantities supplied -	203,387,713	182,253,249	182,275,807	193,915,760	207,617,049	214,697,790	206,897,592	209,804,877	199,725,327	188,788,084	184,578,148	182,927,690
FROM THAMES - - - -	99,348,630	91,560,193	92,193,842	98,051,897	105,185,388	108,736,018	105,873,601	106,294,804	104,052,263	96,830,115	93,728,249	94,505,985
FROM LEA AND FROM OTHER SOURCES -	104,039,083	90,693,056	90,081,965	95,863,863	102,431,661	105,961,772	101,023,991	103,510,073	95,673,064	91,957,969	90,849,899	88,421,705
FROM THAMES.												
CHELSEA - - - - - -	10,616,514	10,419,910	10,537,521	10,918,316	11,768,256	12,417,414	12,055,746	11,496,367	11,461,379	10,876,431	10,515,289	10,619,325
WEST MIDDLESEX - - - -	17,879,207	17,254,712	17,514,613	18,618,629	19,912,978	20,340,331	19,886,032	19,609,621	19,123,436	18,405,406	17,990,655	17,963,109
SOUTHWARK AND VAUXHALL - -	31,102,471	27,601,130	27,876,093	29,031,731	31,361,436	32,459,033	31,782,586	33,510,705	33,014,543	30,600,310	28,701,997	28,793,933
GRAND JUNCTION - - - -	17,789,123	16,993,670	16,875,751	18,060,461	19,478,589	19,534,772	19,690,569	19,544,572	18,555,454	17,158,294	17,018,376	17,190,967
LAMBETH - - - - -	21,961,315	19,290,771	19,389,864	21,422,760	22,664,129	23,984,468	22,458,668	22,133,539	21,897,451	19,789,674	19,501,932	19,938,651
FROM LEA AND FROM OTHER SOURCES.												
NEW RIVER - - - - - -	36,773,000	32,807,000	33,828,000	36,268,000	40,530,000	42,645,000	40,089,000	42,094,000	39,055,000	36,763,000	34,690,000	32,274,000
EAST LONDON - - - - -	51,599,832	43,801,924	42,114,500	44,022,910	45,303,331	46,203,260	44,826,410	44,672,542	40,763,976	40,286,016	41,574,191	41,893,592
KENT - - - - - - -	15,666,251	14,084,132	14,139,465	15,572,953	16,598,330	17,113,512	16,108,581	16,743,531	15,854,088	14,908,953	14,585,708	14,254,113

Note.—The quantities of water in the above Table include the supply for various purposes other than for domestic consumption.

TABLE **26.—Number of Services,** and **Average Daily Quantity of Water** DELIVERED for ALL PURPOSES and for DOMESTIC PURPOSES, by the **London Water Companies** during 1893.

WATER COMPANIES.	NUMBER of SERVICES during the Year.	AVERAGE DAILY SUPPLY OF WATER DURING THE YEAR.				
		Delivered.		Used for Domestic purposes.†		
		Gallons.	Cubic Metres.*	Gallons.	Gallons per Service.	
					1892.	1893.
Total	795,761	196,405,757	892,361	161,052,721	195	202
FROM THAMES	384,430	99,696,749	452,968	81,751,334	205	213
FROM LEA AND FROM OTHER SOURCES	411,331	96,709,008	439,393	79,301,387	186	193
FROM THAMES.						
CHELSEA	36,650	11,141,872	50,623	9,136,335	232	249
WEST MIDDLESEX	76,694	18,708,227	85,000	15,340,746	189	200
SOUTHWARK AND VAUXHALL	115,569	30,486,331	138,513	24,998,791	202	216
GRAND JUNCTION	58,698	18,157,550	82,498	14,889,191	267	254
LAMBETH	96,819	21,202,769	96,334	17,386,271	172	180
FROM LEA AND FROM OTHER SOURCES.						
NEW RIVER	156,684	37,318,000	169,553	30,600,760	183	195
EAST LONDON	175,496	43,921,873	199,557	36,015,936	206	205
KENT	79,151	15,469,135	70,283	12,684,691	147	160
Columns	1.	2.	3.	4.	5.	6.

* A cubic metre is equal in volume to 35·3 cubic feet, or to 220·09668 imperial gallons. It is nearly equivalent to the old English *tun* of four hogsheads, holding 35·248 cubic feet. It is in general use on the Continent; and its volume of water weighs a metric *ton*, differing inconsiderably in weight from the *ton* in common use. It is equal to 100 decalitres: thus a decalitre equals 2·2009668 gallons.

† According to returns of the London Water Companies made to the Select Committee on East London Water Bills (Session 1867), it is estimated that during the year 1866 about 82 per cent. of the total supply of water for all purposes was for domestic use; this proportion has been applied in estimating the quantities in columns 4, 5, and 6, showing the gallons probably used for domestic purposes. The average daily quantity of water supplied by the London Companies during the year 1893 was 196,405,757 gallons (892,361 cubic metres, equal to about as many *tuns* by measure, *tons* by weight), of which about 161,052,721 gallons (731,736 cubic metres) were probably used for domestic purposes. The average quantity used daily for domestic purposes to each service (see Col. 6) is equal to 91·8 decalitres, and, assuming 7·0 persons to each service, corresponds to 28·9 gallons (13·1 decalitres) to each person. The Returns of the Water Companies include services to uninhabited houses.

Report on the Chemical, Physical, and Bacterioscopic Examination of the Waters supplied by the Metropolitan Water Companies during the Year 1893. By Professor Frankland, D.C.L., LL.D., M.D., F.R.S.

Water-analysis Laboratory, The Yews, Reigate,
Sir, *27th January* 1894.

I have to report to you the results of monthly chemical analyses, and physical and bacterioscopic examinations, of the water supplied by the eight Metropolitan Water Companies, the Colne Valley Water Company, and the Tottenham Local Board of Health, during the year 1893.

At the request of the Associated Metropolitan Water Companies I have continued to extend these monthly examinations to (*a*) the chemical, physical, and bacterioscopic condition of the raw river waters at the intakes of the various Companies, and (*b*) to the bacteriology of the water as it issues from the filter beds of each Company, and before it is pumped into the distributing mains.

Chemical and Physical Examination.

Except in February and October, the weather during the year 1893 has been very favourable for the operations of the Companies deriving water from the rivers Thames and Lea, as is seen from the accompanying graphic representation (*see* Diagram No. 1), which shows the fluctuations of organic matter in these rivers during each month of the year. In this diagram, the proportion of organic matter in a given volume of the Kent Company's water, during the nine years ending December 1876, is taken as unity; the proportions in the same volumes of the river waters are expressed by the ordinates, and the months in which these proportions were found by the abscissæ.

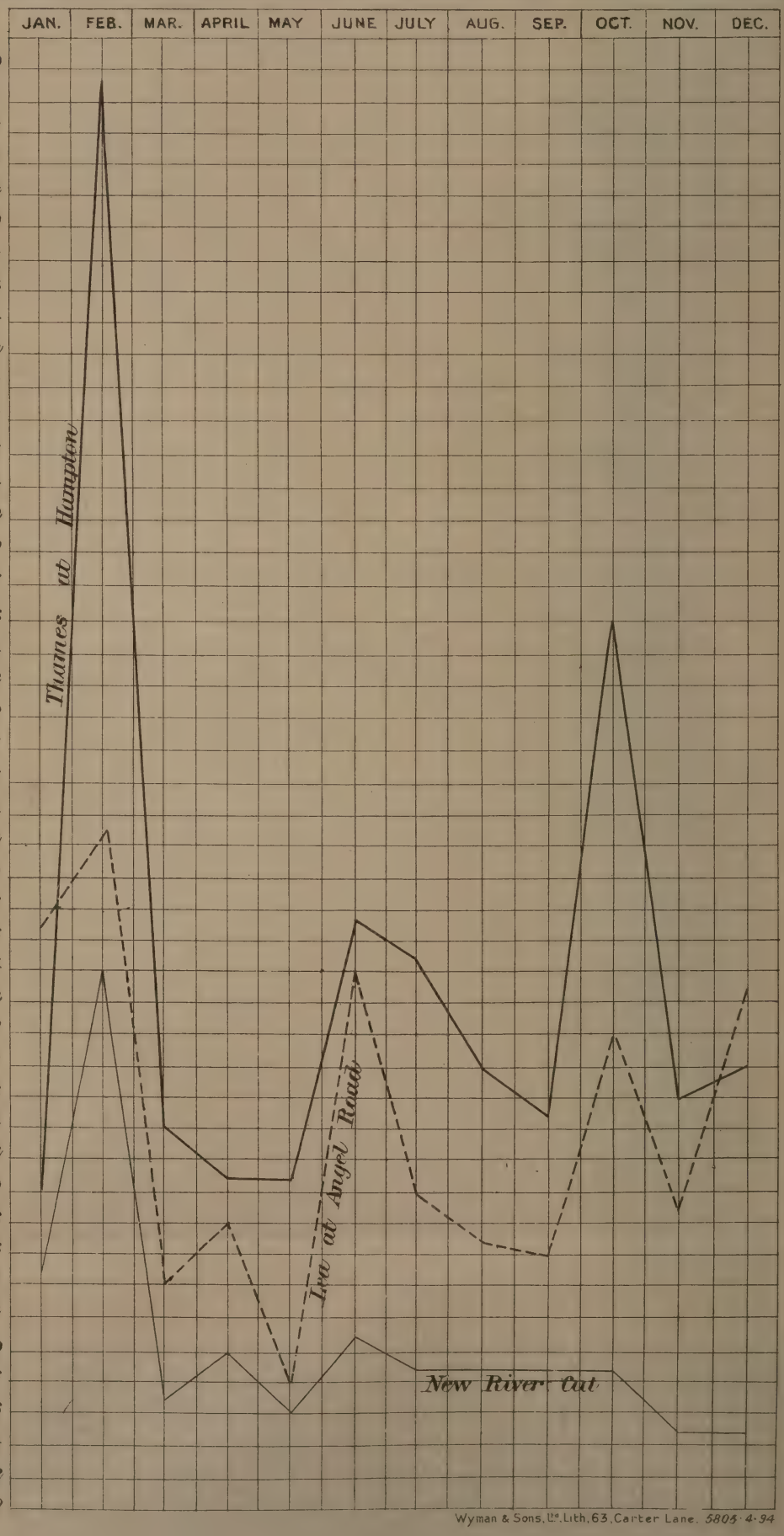
This diagram shows clearly the chemical superiority of the Lea over the Thames as a raw material. It also shows the greater purity of the Lea in its upper, as compared with its lower, reaches. The comparison of the water of the New River cut with that of the river Lea at Angel Road, where the East London Company's intake is situated, must not, however, be construed too strictly, inasmuch as the New River cut receives spring water, and also, during dry seasons, a large volume of deep-well water which is pumped into it. In no case does the curve of the New River cut overtop that of the Lea at Angel Road; and, except in May, it is generally very much below it. On the other hand, the water of the Lea at Angel Road was in January, and again in December, inferior to the raw Thames water at Hampton. But this is a rare occurrence; and, generally, the raw water of the Lea at Angel Road is considerably better than that of the Thames at Hampton. This is, as the diagram shows, especially the case in times of flood. Thus in February, and again in October, the Thames, when in flood, was organically exceedingly impure; whilst the Lea at Angel Road exhibited at these times a comparatively small increase of organic impurity.

The next diagram (No. 2), constructed on the same scale as the last, compares the organic impurity of the raw Thames water at Hampton with that of the average filtered water delivered in London by the five Companies drawing from this river. This diagram makes clear how great was the chemical improvement effected by the Water Companies even during the severe floods of February, although it also shows how much the impounded flood water affected the quality of the supply in March, making it in that month of worse quality, from a chemical point of view, than the raw river water passing the Companies' works at the same time. This remarkable state of things strikingly shows how desirable it is to have, either sufficient storage to tide over the longest floods, or the means of substituting the river, for stored, water, whenever the chemical quality of the former is better than that of the latter. In order to ascertain when that is the case, it would of course be impracticable to make an elaborate chemical analysis; but a rough estimation may be made, in a few minutes, by observations of the colour in a two-foot tube.

To face p. XLV.

DIAGRAM No. 1.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN RAW RIVER WATE



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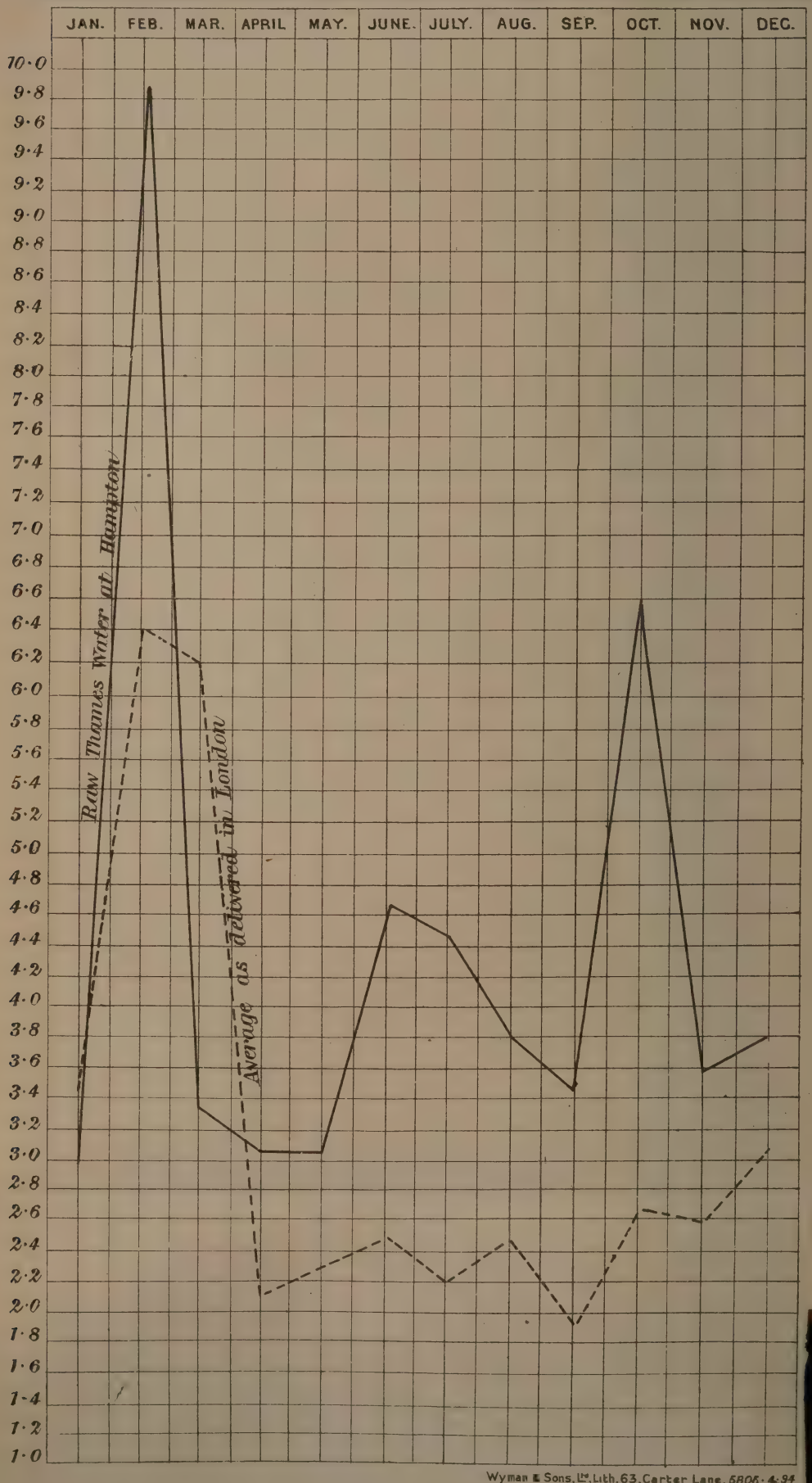
To face p. XLV.

DIAGRAM Nº 2.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN THAMES WATER



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Except in February and March, the diagram shows that the water delivered by the Thames Companies in London was of excellent chemical quality, and it also shows that the lesser flood of October was successfully excluded.

The next diagram (No. 3) compares the raw Lea water at Angel Road with the filtered supply of the East London Company as delivered in London, the scale being the same as before.

The East London Company possesses more storage capacity than that of any other Metropolitan Water Company; but, the diagram shows that even 15 days storage was not sufficient to circumvent the long flood of February. In that month, the stored water was of inferior chemical quality to that of the Lea passing the intake, and this condition of things was even more marked in the following month of March, when the organic impurity in the stored unfiltered water was represented by the figures 4·2; whilst that of the raw Lea water passing the Company's intake was represented by 2·4 only. During the remaining months of the year, this Company's water was, as the diagram shows, of excellent chemical quality. The excessive impurity in the raw water in June was completely excluded from the supply, but the flood water of October was not quite so successfully dealt with, as was the case with the Thames water in that month.

The next diagram (No. 4) contrasts the organic elements contained in the unfiltered water of the New River cut with the amount present in the supply of the New River Company; and, in order to compare the water delivered by this Company with the deep-well waters of the Kent, Colne Valley, Tottenham, and East London Companies, I have introduced into this diagram a third curve showing the average amount of organic impurity in these last-named waters. I have also marked the average amount of organic impurity in the Kent Company's water during the nine years ending December 1876, this being the standard of purity used in these diagrams and in all my reports.

This diagram shows that, except in March, when, doubtless owing to recent floods in the Lea, the New River Company's supply contained an exceptionally large proportion of organic matter, the quality of this Company's water was uniformly excellent; and, in some cases, even better than the average of the deep-well waters. The, for deep-well water, high proportion of organic matter in February, shown in the diagram, was due to exceptional impurity in the Colne Valley and East London well waters; taking the Kent and Tottenham supplies only in that month, the average would be 1·1 instead of 2·1.

All the samples for chemical and physical examination were taken directly from the mains of the several Companies at places recommended by their respective engineers. In addition to the chemical analysis to which each sample has been submitted, the temperature of the water, as it issued from the main at the time of the collection of the sample, has been determined, and the appearance which the water exhibited on being viewed in a two-foot tube, has been recorded. The results of the chemical analyses and observations of temperature are contained in the accompanying Tables A. to L.

Table A. gives the temperatures of the waters at the time of the collection of the samples. From this Table it will be seen that, although the average temperature of the different waters is remarkably uniform throughout the year, the monthly variation, in the case of the river waters, is very great; whilst the temperature of the deep-well water is practically uniform throughout the year. Thus the water, principally derived from the Thames and supplied by the Chelsea, West Middlesex, Southwark, Grand Junction, and Lambeth Companies, varied in temperature from 2°·1 C. (35°·8 Fahr.) in June, to 21°·7 C. (71°·1 Fahr.) in August, and the water of the Lea, distributed by the New River and East London Companies, fluctuated from 3° C. (37°·4 Fahr.) in January, to 20°·2 C. (68°·4 Fahr.) in July. The deep-well water of the Kent Company, on the other hand, was free from these violent fluctuations, and practically maintained a constant temperature throughout the year; it varied only from 11° C. (51°·8 Fahr.) in January, to 13°·1 C. (55°·6 Fahr.) in June. This uniformity in temperature of deep-well water causes it to be cool and refreshing in summer and less likely to become frozen in the service-pipes in winter; whilst river water at 21°·7 C. (71°·1 Fahr.) is unpleasantly vapid, and at 2°·1 C. (35°·8 Fahr.), is soon cooled to the freezing point.

Table B. gives the total amount of solid matters found in 100,000 parts by weight of each water. These solid matters are almost wholly composed of mineral substances, which, in these proportions, in no way diminish the fitness of the water for dietetic purposes. But the salts of lime and magnesia, constituting the principal part of these mineral ingredients, are objectionable; not only because they impart to the water what is known as "hardness," and thus render it unsuitable for washing, but also because they produce incrustations and deposits in steam and kitchen boilers and hot-water pipes. The comparatively small proportion of organic material which the solid matter invariably contains, is, on the other hand, of more importance; because, if present in too large quantity, it interferes with the palatability of the water and imparts to it a more or less brownish-yellow tint. During the past year, however, no water delivered in London has contained a sufficiently high proportion of organic matter to produce either of these effects. The presence of even small proportions of organic matter in river waters is objectionable, partly on sentimental, and partly on hygienic grounds, by reason of the origin of some portions of this organic matter; for the water both of the Thames and the Lea receives, above the points where it is abstracted for the purpose of the metropolitan supply, various contributions of organic matter of animal origin, such as the drainage from manured land, the effluent from sewage works, and even raw sewage itself. This animal matter may also, at any time, be accompanied by zymotic poisons dangerous to health. But, although the sentimental objection to the presence of these matters cannot be removed, it is gratifying to find, as the result of recent researches, that the zymotic poisons are rapidly destroyed in running water exposed to sunlight, so that the most minute microscopic inspection of the water at the intakes of the various Companies has hitherto failed to discover a single pathogenic germ. Further, it is now an established fact, that efficient sand filtration would prevent the passage of such germs into the filtered water even should they arrive in a living condition at the intakes of the Companies. Thus the hygienic objection to the use of filtered water taken from the Thames and Lea is removed. This conclusion is confirmed by the absence in London of zymotic diseases traceable to these waters since the year 1866. To secure this desirable result, however, efficient filtration is essential; and there can be no doubt that the immense loss of life in London during the cholera epidemics of 1849, 1854, and 1866, was due to the want of attention to filtration.

The saline matters dissolved in the deep-well water from the chalk are considerably greater in amount than those found in the river-water; and inasmuch as this chalk water is sent out in its natural condition by the Kent and East London Companies and by the Tottenham Local Board of Health, these supplies contained more solid matter than any of the other Metropolitan waters. The Colne Valley Company, on the other hand, by treating this chalk water with lime before delivery, so reduce the solid matter that the latter was one-third less than the amount present in the river waters, and was considerably less than one-half of that in the deep-well water, either of the Kent Company or of the Tottenham Local Board of Health.

Tables C. and D. are very important; they record the amounts of organic carbon and organic nitrogen in each of the waters, as determined by combustion with oxide of copper. Since these are the only two ingredients of the organic matter which can be accurately determined, these results are the only available evidence of the relative proportions of organic matter present in the waters. These Tables show that, with few exceptions, the river waters, both from the Thames and Lea, were considerably polluted with organic matter in the month of February only. This additional organic matter was, however, exclusively of vegetable origin.

The water derived chiefly from the Lea by the New River and East London Companies was almost invariably superior to the Thames-derived water of the Chelsea, West Middlesex, Southwark, Grand Junction, and Lambeth Companies; the New River Company's water often rivalling the deep-well waters in respect of organic purity; but the sample of the last named Company's water collected in March contained nearly five times as much organic matter as that examined in July. The proportion of organic matter in the deep-well waters of the Kent, Colne Valley, and East London Companies, and in that of the Tottenham Local Board of Health, was, almost invariably, very small.

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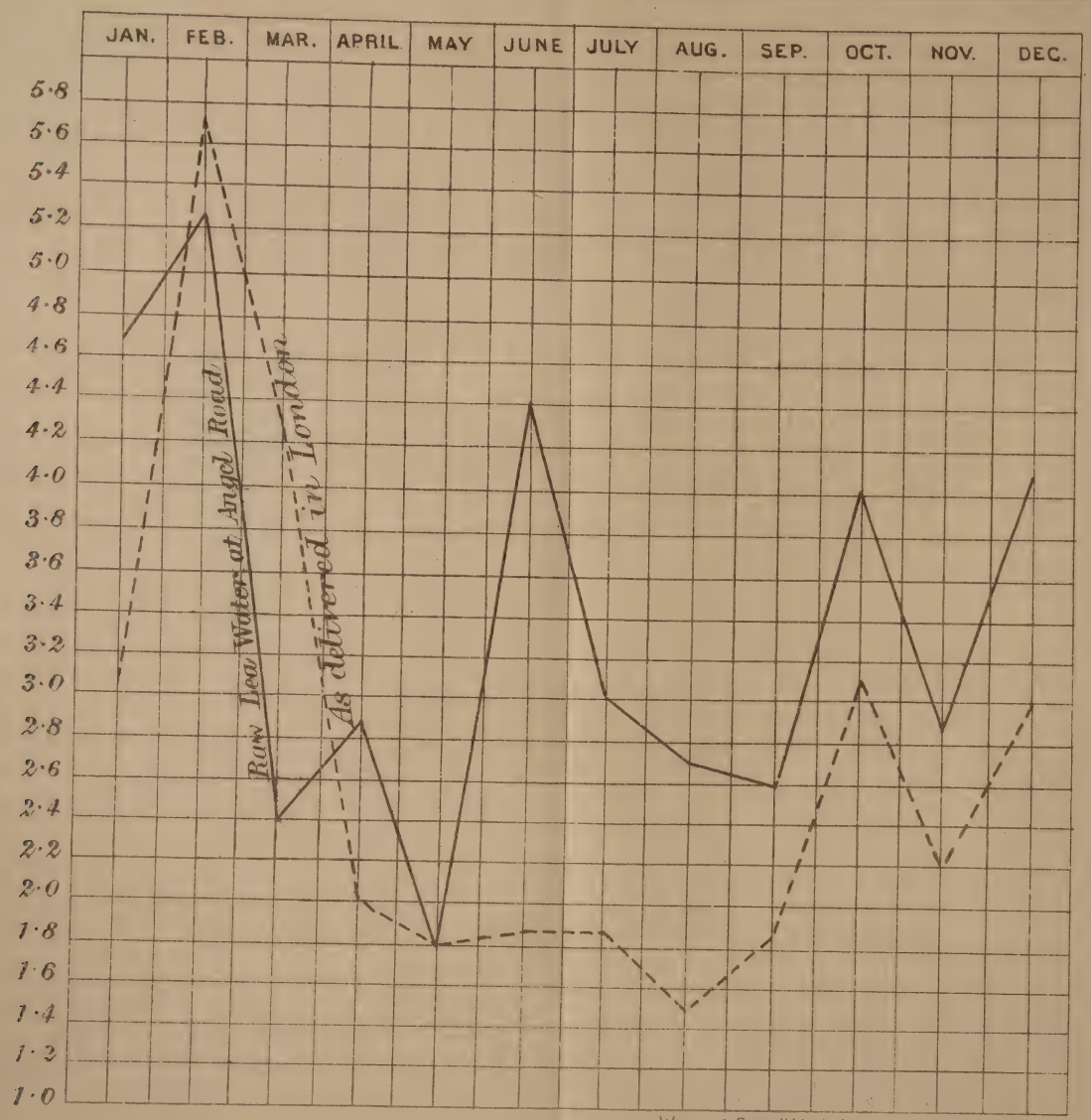
DIAGRAM No 3.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN RAW LEA & EAST LONDON Co's WATER.



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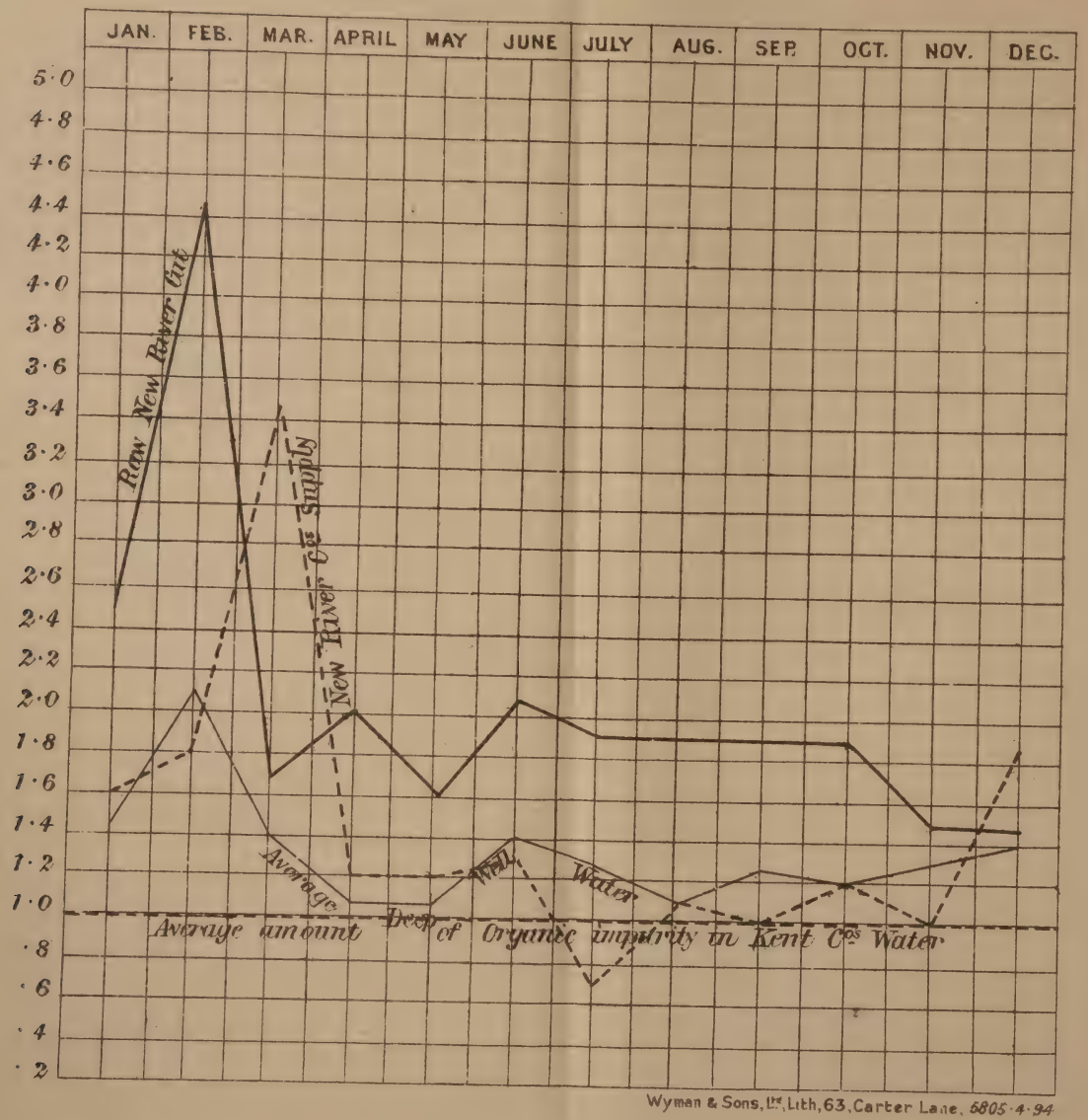
To face p. XLVI.

DIAGRAM No. 4.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN NEW RIVER AND DEEP WELL WATERS.



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Taking the mean proportion of organic impurity contained in the Thames water delivered in 1868 as 1,000, I find that in the subsequent years, 1893 included, the following proportions were present :—

Year.	Proportion of Organic Impurity present in Thames Water as delivered in London.	Year.	Proportion of Organic Impurity present in Thames Water as delivered in London.
1868	1,000	1881	993
1869	1,016	1882	1,033
1870	795	1883	850
1871	928	1884	723
1872	1,243	1885	839
1873	917	1886	756
1874	933	1887	690
1875	1,030	1888	722
1876	903	1889	677
1877	907	1890	680
1878	1,056	1891	1,002
1879	1,165	1892	831
1880	1,254	1893	762

These figures show that the Thames water distributed during the year 1893 was of much better average quality than that sent out during the previous two years, although it still fell short of that supplied during the years 1886 to 1890 inclusive.

Of the water chiefly derived from the river Lea, that supplied by the New River Company contained, in every case, as usual, less organic matter than that of the East London Company, which was in this respect, on the average, superior to the best of the Thames waters.

Taking, as before, the mean proportion of organic impurity contained in the Thames water delivered in 1868 as 1,000, I find that in subsequent years, 1893 included, the following proportions were present in the Lea water :—

Year.	Proportion of Organic Impurity present in Lea Water as delivered in London.	Year.	Proportion of Organic Impurity present in Lea Water as delivered in London.
1868	484	1881	765
1869	618	1882	711
1870	550	1883	620
1871	604	1884	500
1872	819	1885	603
1873	693	1886	500
1874	583	1887	473
1875	751	1888	506
1876	562	1889	504
1877	596	1890	432
1878	747	1891	684
1879	947	1892	610
1880	1,013	1893	502

Thus the Lea water delivered during the year 1893 was of better average quality than usual as regards organic purity; it was in fact superior to that delivered during either of the previous two years.

The organic matter found in the deep-well water supplied to London during the past twenty-six years is, of course, much smaller in amount, and the fluctuations from year to year are much less violent than in the river waters. Referred to the same standard, the figures are as follow :—

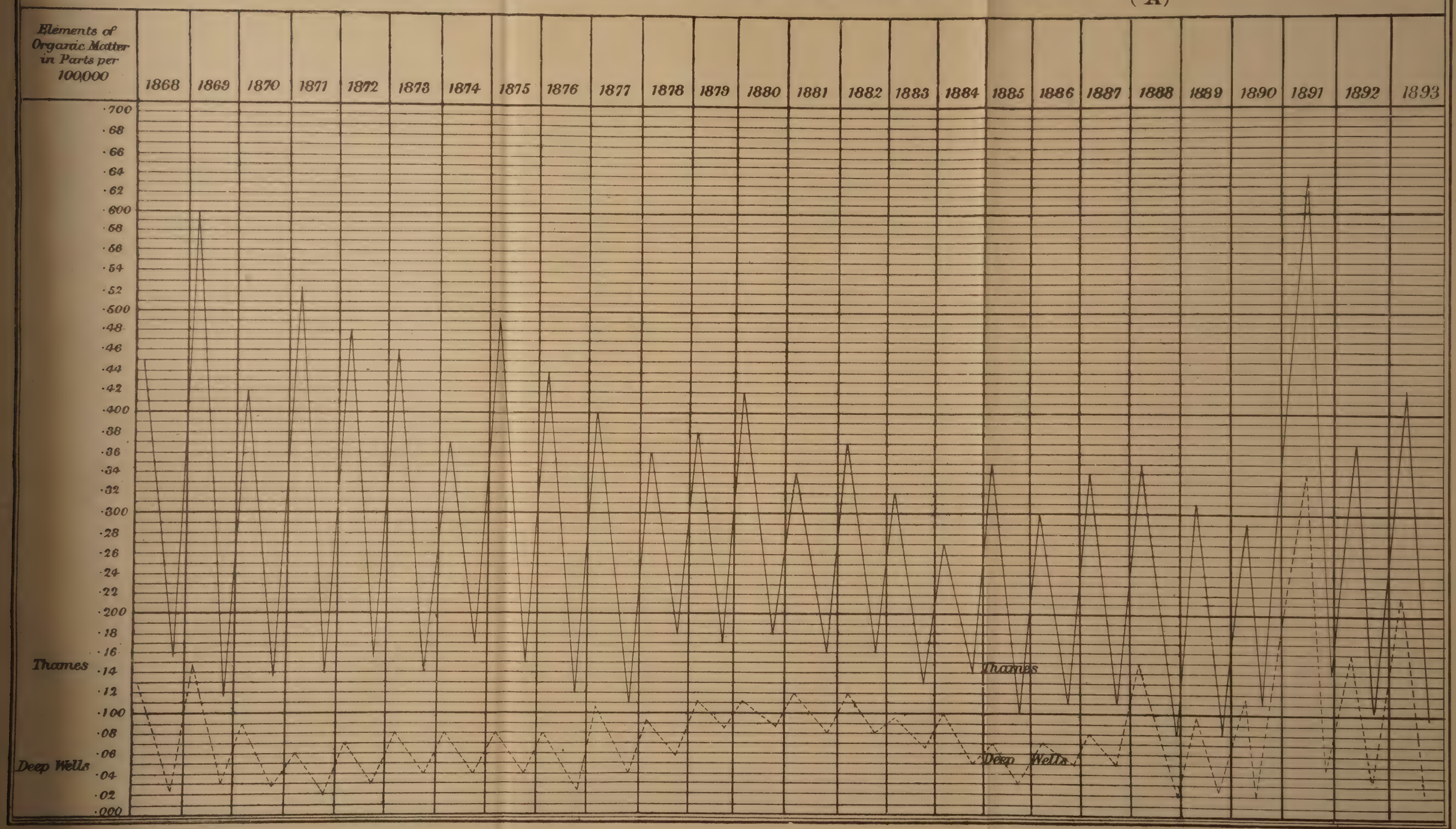
Year.	Proportion of Organic Impurity present in Deep-well Water as delivered in London.	Year.	Proportion of Organic Impurity present in Deep-well Water as delivered in London.
1868	254	1881	405
1869	312	1882	409
1870	246	1883	321
1871	150	1884	264
1872	221	1885	200
1873	250	1886	244
1874	287	1887	249
1875	250	1888	241
1876	246	1889	268
1877	243	1890	252
1878	323	1891	357
1879	387	1892	338
1880	393	1893	327

Table E. shows the proportional amount of organic elements (organic carbon and organic nitrogen) in each of the waters, the average amount of these elements contained in the Kent Company's water during the nine years ending December 1876 being taken as unity.

This Table shows that the maximum, minimum, and average proportions of organic matter, as measured by this standard, present in the several waters during the year 1893, were :—

Sources.		Maximum.	Minimum.	Average.
Deep wells	Kent	1·4	0·4	0·7
	Tottenham	1·7	0·9	1·3
	East London	3·7	1·0	1·6
	Colne Valley	2·4	1·3	1·8
River Lea	New River	3·5	0·7	1·5
	East London	5·7	1·5	2·7
River Thames	Chelsea	5·3	1·6	2·8
	West Middlesex	6·3	2·0	3·0
	Southwark	7·0	2·0	3·3
	Grand Junction	7·1	1·7	3·2
	Lambeth	7·3	1·9	3·5

Maximum and Minimum Proportion of Organic Matter in Water from Thames and Deep Wells. (*A)



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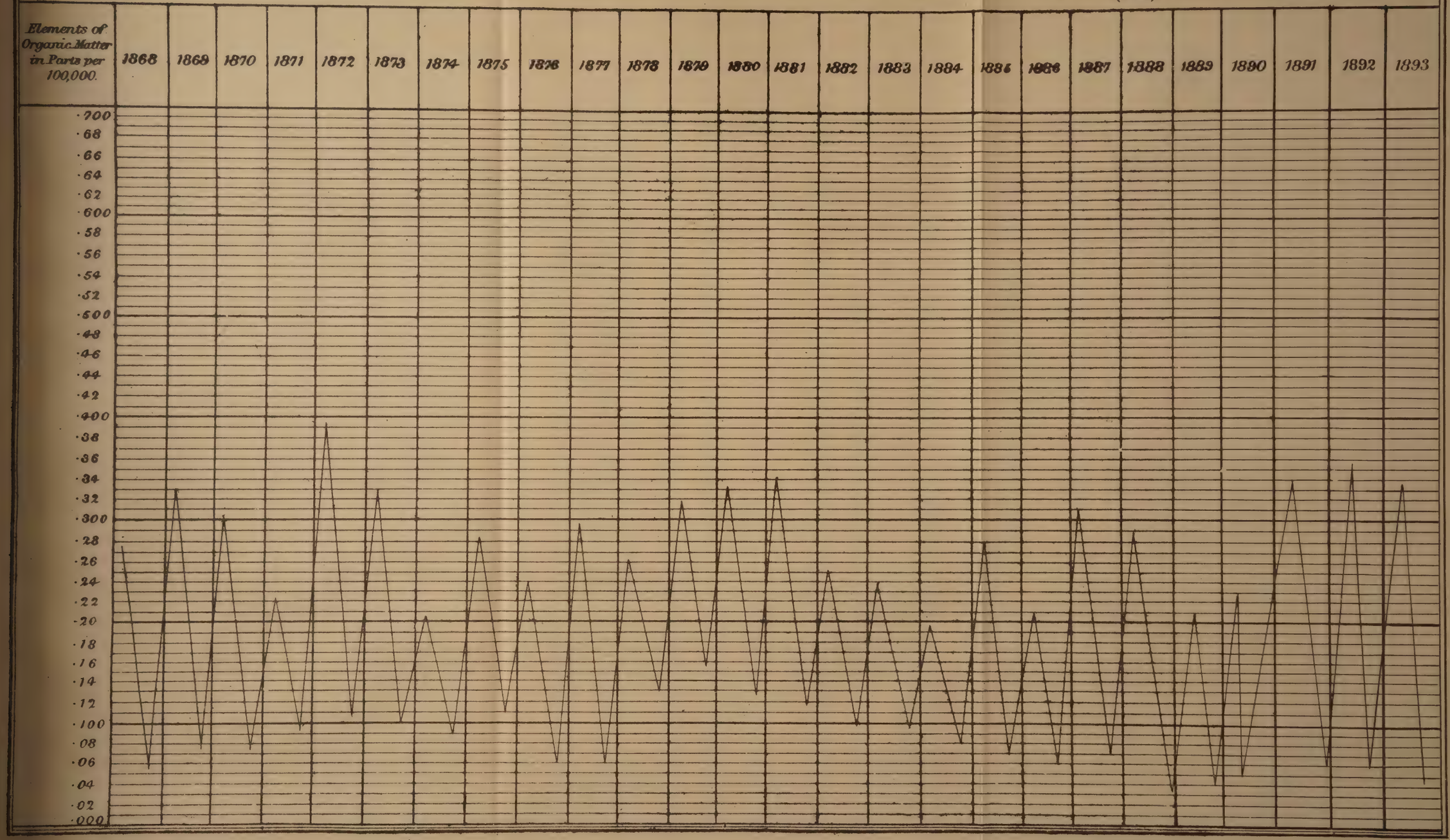
Maximum & Minimum Proportion of Organic Matter in River Lea Water.

(*B)



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Thus, of the deep-well waters, that sent out by the Kent Company contained by far the least proportion of organic matter. Of the river waters, that supplied by the New River Company stood much higher than the others in this respect, whilst the East London Company's water was superior to any of the Thames-derived waters, but was closely approached by that of the Chelsea Company.

The following Table exhibits the maximum amount of organic matter in the waters supplied from the Thames and Lea during the years 1868 to 1893 inclusive, the average of the samples from each source in the month of greatest impurity being taken for comparison :—

MAXIMUM AMOUNT OF ORGANIC MATTER.

THAMES.			LEA.		
Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.	Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.
1868	·45	January.	1868	·27	February.
1869	·60	February.	1869	·33	February.
1870	·42	January.	1870	·30	January.
1871	·52	October.	1871	·22	February.
1872	·48	January & December.	1872	·39	December.
1873	·46	January.	1873	·33	January.
1874	·37	March.	1874	·21	March.
1875	·49	November.	1875	·28	November.
1876	·44	December.	1876	·24	March.
1877	·40	January.	1877	·30	January.
1878	·36	December.	1878	·26	June.
1879	·38	February.	1879	·33	July.
1880	·42	October.	1880	·33	February.
1881	·34	February.	1881	·34	February.
1882	·37	November.	1882	·26	December.
1883	·32	January.	1883	·24	December.
1884	·27	February.	1884	·20	March.
1885	·35	November.	1885	·28	December.
1886	·30	December.	1886	·21	February.
1887	·34	January.	1887	·31	January.
1888	·35	December.	1888	·29	December.
1889	·31	January.	1889	·21	November.
1890	·27	January.	1890	·19	January.
1891	·43	October.	1891	·27	November.
1892	·35	December.	1892	·29	Jan. and Dec.
1893	·38	February.	1893	·23	March.

It is thus evident that the comparatively large amount of organic contamination in the Thames-derived water noted in 1891 has not occurred again, and the maximum pollution in the Lea, which exhibited an increase in the two previous years, fell again to the normal in 1893.

The variations in the proportion of organic matter in the several supplies are exhibited graphically in the accompanying diagrams (A. & B.), in which the maximum and minimum proportions of organic matter annually present in each of the three classes of waters since 1868 are registered.

Tables F. and G., which record the proportions of ammonia and of nitrogen as nitrates and nitrites in the various waters, require no explanation.

In Table H. is given the amount of combined nitrogen, both mineral and organic, found in each of the waters. The total amount is of importance, inasmuch as, after making a small correction for the combined nitrogen present in average rain-water, it sums up the evidence of the nitrogenous organic matters which have gained access to the water in the past, as well as of those which were still present at the time the analysis was made. In river and surface water generally, this total combined nitrogen undergoes a very appreciable reduction during the warmer months of the year, in consequence of the vegetable life which then abounds in such water. On this account, therefore, the amount of total combined nitrogen found in the river waters in winter can alone be regarded as bearing any relationship to the amount of nitrogenous matters which the waters have received.

The deep-well waters, on the other hand, are not subject to the influence of vegetable life, and the amount of total combined nitrogen is, therefore, equally indicative at all times of the year.

Hence, in the following Table, the average proportion of total combined nitrogen in the case of the Thames and Lea is given for the months of January, February, March, October, November, and December only, whilst in the case of the deep-wells it is calculated on the whole year :—

Year.	Thames.	Lea.	Deep-Wells.
1884	·244	·273	·301
1885	·233	·277	·292
1886	·319	·336	·355
1887	·307	·352	·365
1888	·304	·322	·358
1889	·311	·358	·438
1890	·280	·296	·371
1891	·217	·247	·287
1892	·292	·332	·271
1893	·281	·314	·276

A comparison of these numbers shows that the marked increase of total combined nitrogen observed in 1892 in both river waters has been followed by a corresponding reduction last year, whilst in the deep-well waters the decided reduction during the two preceding years has been maintained, but this is due to the inclusion of the deep-wells of the East London Water Company and the Tottenham Local Board of Health, which contain a remarkably small amount of nitrogenous compounds. Excluding these wells, the number rises to ·497, which shows a decided increase.

Table I. exhibits the amount of chlorine present in each of the waters, and indicates that on no occasion has brackish or tidal water gained access to the Companies' reservoirs. The amount of chlorine in all three classes of water is, on the average, almost exactly the same as last year, except that there is a marked increase in the deep-well water of the Tottenham Local Board of Health and the East London Company.

Table K. gives the hardness of the various waters. The term "hardness" is used to denote the proportion of carbonate of lime, or its equivalent of other soap-destroying substances, present in 100,000 parts of the water. The variations

in hardness for the several descriptions of water during recent years are given in the following Table:—

Year.	Thames.	Lea.	Kent.	Colne Valley.	Tottenham.	East London Deep Well.
1884	19°·4	20°·1	28°·6	5°·2	19°·7	—
1885	18°·7	20°·0	27°·9	4°·8	20°·4	—
1886	19°·2	20°·3	29°·4	4°·5	21°·3	—
1887	19°·3	20°·8	29°·9	5°·7	20°·5	—
1888	20°·0	22°·0	30°·2	7°·5	22°·5	—
1889	20°·2	22°·1	29°·9	7°·0	24°·6	—
1890	20°·4	22°·0	29°·7	7°·9	23°·8	—
1891	20°·3	21°·8	29°·4	8°·9	24°·4	18°·9
1892	20°·8	21°·9	28°·4	7°·5	23°·9	19°·2
1893	19°·6	21°·4	28°·3	7°·1	23°·1	20°·2

None of the waters supplied to the Metropolis are of such excessive hardness as to influence their fitness for drinking; but, with the exception of that supplied by the Colne Valley Company, the hardness is sufficiently great to materially diminish the value of the waters for washing, steam, and industrial purposes generally. The hardness of the metropolitan water supply is almost entirely due to the presence of bi-carbonate of lime in solution; this bi-carbonate of lime can be readily removed by treating the water with lime, as is so successfully done by the Colne Valley Company. Thus the water pumped from the chalk by the Colne Valley Company is initially of about the same degree of hardness as the Kent Company's supply, but, by treatment with lime before delivery, its hardness is reduced to about one-fourth of its original amount. The hardness of the river-water supplies is similarly reducible. This mode of softening is by far the most economical, for it entails only about one-eightieth of the expense which devolves upon the private consumer in the shape of additional soap required for washing.

Lastly, Table L. records the averages, for the past year, of each determination referred to above, and thus gives a general survey of the thermal and chemical characters of the water delivered by each Company during the past year.

In the following Table are recorded the results of my observations respecting the freedom from turbidity or otherwise of the various waters; and, for the purpose of comparison, the results of my first observations in 1868 are also included:—

Companies or Local Authorities.	Number of occasions when clear and transparent.		Number of occasions when slightly turbid.		Number of occasions when turbid.		Number of occasions when very turbid.	
Thames.	1868.	1893.	1868.	1893.	1868.	1893.	1868.	1893.
Chelsea	7	12	2	0	1	0	2	0
West Middlesex	12	12	0	0	0	0	0	0
Southwark	1	12	5	0	4	0	2	0
Grand Junction	9	12	2	0	1	0	0	0
Lambeth	6	12	1	0	2	0	3	0
Lea.								
New River	10	12	2	0	0	0	0	0
East London	3	12	8	0	1	0	0	0
Deep Wells.								
Kent	8	12	3	0	1	0	0	0
Colne Valley	—	12	—	0	—	0	—	0
Tottenham Local Board of Health	—	8	—	4	—	0	—	0
East London	—	10	—	2	—	0	—	0

This Table illustrates the great improvement which the Water Companies have effected in filtration since I first began these examinations for turbidity in 1868. In that year, seven samples were so turbid as to be highly repulsive in appearance, nine samples were turbid, and no less than 20 slightly turbid, whereas during the year just closed not one of the samples of filtered water was turbid even in the slightest degree. On the other hand, six samples of deep-well water, which does not require filtration, were slightly turbid owing doubtless, in most cases at least, to disturbance by the pumping machinery.

Bacterioscopic Examination.

It has been proved by an overwhelming amount of evidence that cholera and typhoid fever are, the first generally, and the second frequently, propagated through the agency of water. The fact that cholera generally travels up stream in tidal rivers is only apparently inconsistent with this statement. The disease almost always arrives at the mouths of rivers by sea. The choleraic dejections are thrown into the river and are carried by water up stream as far as the tide reaches; but there are few tidal rivers which are not navigable by barges far above the range of the tide. The bargemen almost always dip their drinking water out of the river, even in the tidal reaches, and consume it without any filtration. They thus become infected, and convey the zymotic poison up stream as far as the river is navigable, and, it may be, still further by means of canals. The use of raw or imperfectly filtered water for dietetic purposes from such sources is, therefore, in times of epidemic especially, fraught with extreme danger. Fortunately, however, recent bacteriological research, together with experience bought through the sacrifice of thousands of lives, has demonstrated, in Hamburg and Altona, that *efficient* sand filtration is, practically, a perfect safeguard against the introduction of the cholera bacillus into drinking water, and it can scarcely be doubted that what is true of the cholera bacillus is also true of the typhoid bacillus, although in the latter case there has been no such rigorous demonstration. To attain this desirable result, however, it has been no less convincingly shown that the filtration must be efficient, for the experience, gained so dearly in the great cholera epidemics in London, has been strikingly confirmed by Dr. Koch's exhaustive investigation of the cholera epidemics at Altona and the Nietleben Lunatic Asylum in Germany.

The bacterioscopic examination of the water supplied to vast communities like London has therefore become an investigation of the highest importance from a hygienic point of view, and I am, therefore, each year devoting an increased amount of attention to the bacteriological character of the various waters supplied to the Metropolis.

The samples of water submitted to this examination were obtained at the works of the respective Companies immediately after the water left the filters, and before it was pumped into the distributing mains. By this method of sampling, the maximum degree of sterility of each water is determined. This utmost freedom from microbes, after all sources of contamination have been passed, is obviously the most important moment in the history of the water; for the smaller the number of microbes found in a given volume at that moment, the less is the probability of pathogenic organisms being present; and, although the non-pathogenic may, and probably will, afterwards multiply indefinitely, this is of no consequence in the initial absence of the pathogenic. In this determination of maximum sterility, it is of course of the utmost importance that multiplication should be prevented during the few hours which, in the absence of suitable arrangements at the works of the different Companies, must necessarily elapse before the samples can be submitted to cultivation in my laboratory. This is secured by immediately sealing, hermetically, the glass tubes containing the samples and then packing them in ice. At the freezing point of water, microbes either do not multiply at all, or do so with extreme slowness.

Although the collection of the samples for microbe cultivation from the filter-wells on the works of the seven different Water Companies drawing their supplies from

rivers entails great additional labour, which can only be performed by an expert in bacteriology, I am of opinion that it is the only trustworthy method by which the efficient filtration and comparative bacterial purity of the Metropolitan waters can be ascertained.

In illustration of the bacterial condition of the Thames and Lea at the intakes of the Companies drawing from these rivers, I have also submitted to bacterioscopic examination samples of the raw, or unfiltered, water collected, as nearly as practicable, contemporaneously with those of the filtered water. In addition, I have occasionally examined the water which is pumped by the Southwark Company from the gravel flanking the Thames near the Company's works at Hampton, and also that of the East London Company after a fortnight's storage, but before filtration. I have undertaken this heavy additional work at the request of the Associated Metropolitan Water Companies, who have unreservedly placed their plant at my disposition for this purpose, and have afforded me every facility for carrying on this important inquiry. I have also here to record my best thanks to my assistant, Mr. W. T. Burgess, F.I.C., for his very valuable help in the conduct of this investigation.

The deep-well water of the Kent Company does not require filtration, and the samples for microbe cultivation were therefore taken from the water as it was discharged from the pumps.

The following tables give the results of these examinations during the year 1893; and, in order that the conditions, as regards storage and filtration, under which each of the seven Companies drawing from rivers works, I have added, in each case, the amount of storage before filtration, the depth of sand on the filter beds, and the rate of filtration. These additional data are taken from the reports of the Water Examiner:—

TABLE No. 1.—MICROBE DETERMINATIONS in UNFILTERED WATERS.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
The Thames at Hampton -	0·0	8,210	7·0	13,947	7·0	3,737	11·6	1,763
Gravel water at Hampton -	5·3	80	5·3	20	8·5	50	9·3	34
Water from artificially laid gravel at Hampton.	1·6	6,050	6·0	4,474	8·6	1,434	11·5	539
The New River Cut - -	4·0	31,421	5·0	1,842	7·6	500	12·7	763
The Lea at the East London Company's intake.	2·0	56,150	4·2	6,263	7·7	2,350	12·5	2,579
Ditto after 14 days' storage	1·3	1,263	4·6	1,368	7·3	382	12·0	447

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
The Thames at Hampton -	17·6	2,052	20·4	2,789	18·2	2,132	21·3	1,895
Gravel water at Hampton -	14·3	320	16·5	28	17·5	22	—	—
Water from artificially laid gravel at Hampton.	—	—	—	—	—	—	—	—
The New River Cut - -	15·8	1,973	15·8	2,079	17·0	3,934	20·0	1,303
The Lea at the East London Company's intake.	17·3	3,145	19·7	4,184	18·2	8,816	21·2	6,658
Ditto after 14 days' storage	17·0	829	19·4	1,369	17·8	2,474	20·2	421

Source of Sample.	September.		October.		November.		December.		Mean. Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		°		
The Thames at Hampton -	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
Gravel water at Hampton -	15·4	68	13·8	68	—	—	—	—	77
Water from artificially laid gravel at Hampton.	—	—	—	—	—	—	—	—	2,874
The New River Cut - -	11·3	1,053	11·7	2,276	5·6	2,131	5·4	3,408	4,390
The Lea at the East London Company's intake.	12·0	3,658	11·8	5,368	5·9	8,026	5·5	11,842	9,920
Ditto after 14 days' storage	13·0	921	—	—	5·8	947	5·5	1,369	1,072

These results of the bacterioscopic examination of the unfiltered waters used by the Metropolitan Companies are very interesting and instructive. They demonstrate, in the first place, how very much the bacterial quality of the water may differ from its chemical quality; thus, from a chemical point of view, the water pumped from the gravel near the banks of the Thames does not differ much from the Thames water itself, and it is also generally more or less turbid; but, whilst the raw Thames water contained during the year 1893, on the average, 4,965 microbes per c.c., the water abstracted from the gravel contained only 77 microbes in the same volume. Indeed, the gravel water not unfrequently exceeded, in bacterial purity, the filtered Thames water sent into London. An interesting case of this kind occurred at the Southwark Company's works in February. On the 4th of that month Filters 1, 2, and 3 had been supplied for four days with gravel water exclusively; containing on the 4th, only 20 microbes per c.c.; whilst these filters were delivering, at the same time, water containing respectively 66, 62, and 54 microbes per c.c. This enormous bacterial amelioration was, however, observed only in the case of the water abstracted from the natural gravel beds. No such high degree of purification has been, as yet, obtained by gravel laid artificially for this purpose. The Grand Junction Company has tried this later plan upon a large scale during the past year, and the results of the bacterioscopic examination of the water are given in the above table, under the heading of "Water from artificially laid gravel at Hampton." Unfortunately, the samples collected in January, February, and March were afterwards ascertained to be mixtures of raw Thames water with this gravel water, and the result obtained from the April sample alone is fairly representative of the bacteriological condition of the water from the artificially laid gravel. The number, 539 microbes per c.c., in this month's sample exhibits, however, a sufficient improvement to warrant a continuance of the experiments by the Grand Junction Company.

In the second place, the table shows the great bacterial inferiority of the Lea at the East London Company's intake, as compared with the Thames at Hampton; the average number of bacteria in 1 c.c. of water at the intake of the East London Company being twice as great as that found in the raw Thames water at Hampton. The sewer outfall at Hertford is probably the cause of this excessive bacterial pollution of the Lea below that outfall.

The water abstracted from the Lea above the Hertford sewer outfall by the New River Company, and conducted to their works in the New River cut exhibited, as a rule, a much higher degree of bacterial purity; but the comparison is scarcely trustworthy, on account of the admixture of variable quantities of spring water, and of deep-well water pumped into the New River cut by this Company. There was, in February, an enormous influx of bacteria into the New River cut, amounting to more than the aggregate number found in an equal volume of this water during the remaining months of the year. At the same time, however, the Thames at Hampton and the Lea at Angel Road contained exceptionally large numbers of microbes. Excluding the January sample, the average number of bacteria contained in 1 c.c. of the water in the New River cut is reduced from 4,390 to 1,933.

In the third place, the table confirms the observation which I made in 1892, namely, that a low temperature favours, probably not the multiplication, but, at all events, the preservation of living spores in the river waters; for the numbers found in the Thames in January, February, October, and December, in the New River cut in January, and in the Lea at Angel Road in January and December were far in excess of those met with in the warmer months of the year.

Lastly, the table shows the great destruction of bacteria by storage, for whilst the water at the intake of the East London Company contained, on the average of the year, 9,920 microbes per c.c., the same water, after storage for 14 days, averaged only 1,218 per c.c.

The Chelsea Company.

Amount of storage	14·7 days.
Average thickness of sand upon filters	4 feet.
Average rate of filtration per square foot per hour	1·75 gallon.
Maximum percentage of microbes removed	100·00
Minimum percentage of microbes removed	95·25
Average percentage of microbes removed	98·24

TABLE 2.—MICROBE DETERMINATIONS in the CHELSEA COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	0·0	8,210	7·0	13,947	7·2	3,737	11·6	1,763
Chelsea Company's supply	2·0	24	6·5	0	8·1	11	11·1	18

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	17·6	2,052	20·4	2,789	18·2	2,132	21·3	1,895
Chelsea Company's supply	16·8	16	20·0	86	19·0	13	21·6	220

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		°		
Thames unfiltered water	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
Chelsea Company's supply	14·0	55	13·5	8	7·5	6	5·3	7	34

This table shows that, except in the month of August, this Company delivered water of a very high degree of bacterial purity; rivalling, in many cases, deep-well water in this respect. Indeed, in the month of February, when the Thames at the intake contained 13,947 microbes, or their spores per c.c., this Company's water, which was being pumped from the general filter well into the supply mains, was absolutely sterile. It is difficult to account for the abnormal result in August: the sample for cultivation was collected on the 10th, and one out of the seven filters contributing to the general well had been cleansed and set to work only five days previously; but in February, when the filtered water was absolutely sterile, one of the filters had only been at work for six days. Omitting the abnormal sample in August, the average number of microbes in 1 c.c. of this Company's water during the year was 18.

West Middlesex Company.

Amount of storage	6·7 days.
Average thickness of sand on filter	2·6 feet.
Average rate of filtration per square foot per hour	1·3 gallon.
Maximum percentage of microbes removed	99·94
Minimum percentage of microbes removed	92·67
Average percentage of microbes removed	98·87

TABLE 3.—MICROBE DETERMINATIONS in the WEST MIDDLESEX COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	0·0	8,210	7·0	13,947	7·2	3,737	11·6	1,763
West Middlesex Company's supply.	0·8	42	5·2	8	7·3	12	10·3	12

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	17·6	2,052	20·4	2,789	18·2	2,132	21·3	1,895
West Middlesex Company's supply.	16·4	32	19·0	10	18·7	10	20·3	139

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		°		
Thames unfiltered water	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
West Middlesex Company's supply.	13·3	22	12·3	10	5·5	5	5·4	5	26

Except in the month of August, this Company delivered water of a very high degree of bacterial purity. The average number of microbes per c.c. during the whole year amounting to only 26; but, omitting the abnormal sample of August, this number is reduced to 15, which must be pronounced an excellent record. The lowest number found in this Company's water was 5 per c.c. in December; whilst the raw water of the Thames at the intake contained at the same time 6,316 microbes per c.c.

Like the Chelsea, this Company had also an abnormal number of microbes in the filtered water in August. The sample was collected on the 11th, and two out of 11 filters had recently been cleaned and restarted, viz.: one on the 4th, and one on the 10th.

Southwark and Vauxhall Company.

Amount of storage	1·7 days.
Average thickness of sand on filters	2·5 feet.
Average rate of filtration per square foot per hour	1·5 gallon.
Maximum percentage of microbes removed	99·92
Minimum percentage of microbes removed	85·14
Average percentage of microbes removed	98·08

TABLE 4.—MICROBE DETERMINATIONS in the SOUTHWARK COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	0·0	8,210	7·0	13,947	7·2	3,737	11·6	1,763
Southwark Company's supply:—								
No. 1 filter, Hampton	1·2	56	7·3	66	—	—	11·4	30
No. 2 „ „	1·2	1,220	7·2	62	7·8	42	11·7	52
No. 3 „ „	0·7	214	7·3	54	7·5	80	—	—
No. 4 „ „	—	—	—	—	—	—	—	—
No. 6 „ „	—	—	—	—	—	—	—	—
No. 1, Battersea	—	—	—	—	—	—	—	—
Tap on main, Battersea	—	—	—	—	—	—	—	—

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	17·6	2,052	20·4	2,759	18·2	2,132	21·3	1,895
Southwark Company's supply:—								
No. 1 filter, Hampton	—	—	—	—	—	—	—	—
No. 2 „ „	15·8	14	21·3	16	18·0	6	—	—
No. 3 „ „	—	—	—	—	—	—	20·7	20
No. 4 „ „	16·6	16	20·5	20	—	—	20·9	27
No. 6 „ „	16·7	134	—	—	—	—	—	—
No. 1, Battersea	—	—	—	—	—	—	—	—
Tap on main, Battersea	—	—	—	—	—	—	—	—

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		°		
Thames unfiltered water	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
Southwark Company's supply:—									
No. 1 filter, Hampton	12·0	39	13·7	566	6·2	8	—	—	127
No. 2 „ „	—	—	—	—	8·7	16	—	—	178
No. 3 „ „	—	—	14·2	11	—	—	—	—	76
No. 4 „ „	12·0	14	—	—	—	—	5·6	25	20
No. 6 „ „	—	—	—	—	—	—	—	—	134
No. 1, Battersea	—	—	—	—	—	—	5·7	180	180
Tap on main, Battersea	—	—	—	—	—	—	6·3	88	88

The filtration plants of the Chelsea and West Middlesex Companies deliver the filtered water into general receptacles or wells, from which the samples for bacterioscopic examination were drawn, and there was no satisfactory opportunity at those works, for obtaining separate samples from each of the filter beds. At the Southwark Company's works, however, I have been able to obtain samples from

several of the separate filters. The above Table, giving the results of the examination of these samples, shows several cases in which effective bacterial filtration was not attained. Thus in October, No. 1 filter was delivering water which contained 566 bacteria, or their spores, in one c.c.; in January, No. 2 filter was passing water containing no less than 1,220 microbes per c.c.; although, during the rest of the year, the water from this filter never contained more than 62 microbes per c.c., and on one occasion, only 6, when the untreated water contained 2,132. Again, the water from filter No. 3, in January, contained 214 microbes; whilst, during the remainder of the year, it never exceeded 80 per c.c. in any of my determinations. Lastly, of the Battersea filters, the water from No. 1 contained, in December, 180 per c.c., which is an abnormally high number, although the unfiltered water at that time contained no less than 6,316 per c.c.

In the earlier months of the year, the filters of this Company were much overtaxed, but subsequently additional filters, then in course of construction, have been got to work; and the Southwark Company will, no doubt, make a much better record during the current year.

Grand Junction Company.

Amount of storage	3·5 days.
Average thickness of sand on filters	1·9 foot.
Average rate of filtration per square foot per hour	2·2 gallons.
Maximum percentage of microbes removed	99·77
Minimum percentage of microbes removed	85·95
Average percentage of microbes removed	97·12

TABLE No. 5.—MICROBE DETERMINATION in the GRAND JUNCTION COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	0·0	8,210	7·0	13,947	7·2	3,737	11·6	1,763
Grand Junction, Kew general filter well.	1·3	170	5·6	32	8·0	14	11·1	66
Grand Junction, Hampton filter.	—	—	6·3	338	8·2	78	—	—
Grand Junction, Kew South filter.	—	—	—	—	—	—	—	—

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	17·6	2,052	20·4	2,789	18·2	2,132	21·3	1,895
Grand Junction, Kew general filter well.	17·0	60	19·4	392	—	—	18·7	146
Grand Junction, Hampton filter.	17·3	34	20·9	360	18·3	38	21·3	56
Grand Junction, Kew South filter.	—	—	20·0	32	—	—	21·0	32

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
Grand Junction, Kew general filter well.	13·3	68	12·5	46	6·1	32	5·7	104	103
Grand Junction, Hampton filter.	13·0	28	13·5	72	6·0	44	6·0	313	136
Grand Junction, Kew South filter.	13·2	64	12·4	64	6·1	56	6·1	24	45

Four of the samples collected at this Company's works at Kew during the year contained an excess of microbes over 100 per c.c. The abnormal samples were collected from the general well in January, June, August, and December. Of the samples collected at Hampton, those taken in February, June, and December also contained an abnormal number of microbes. The so-called South, or No. 8, Filter, at the Kew Bridge Works, never furnished an abnormal sample throughout the year, but only six samples were examined from this filter. The Kew filter No. 1 of this Company had undergone a thorough washing of all the materials of which it was composed, the cleaning operation having lasted several months. It was practically at this time a new filter, and was started about August the 15th. A sample of water collected from this filter the next day (August 16th) contained 479 microbes per c.c. Another sample collected on the 26th of August, 11 days after the filter was restarted, still contained 434 microbes or their spores per c.c. Thus it would appear that the thorough washing of this filter had seriously impaired its quality for effecting bacterial purification.

With respect to the sample collected from the general filter-well at Kew on June 21st, I have to remark that, out of seven filters contributing to this well, one had been set to work on the 16th and another on the 19th, shortly before the sample was taken. Again, the sample examined in August, and obtained from this well, had received a contribution from one of the filters which had been cleaned and set to work only two days previously.

With regard to the abnormal samples from the general filter-well at Hampton, I have to say, that the one collected in February was taken shortly after the cleaning of three out of five filters, viz., one five days, another six days, and a third only three days previously. The June sample was collected on the 20th, three days after one of the five filters had been cleaned and set to work, and one day after a second of these filters had been started. Again, in December, one of the filters at these works was cleaned and restarted three days before the sample was taken.

Lambeth Company.

Amount of storage	6·4 days.
Average thickness of sand on filters	2·8 feet.
Average rate of filtration per square foot per hour	2·4 gallons.
Maximum percentage of microbes removed	99·89
Minimum percentage of microbes removed	95·52
Average percentage of microbes removed	98·08

TABLE No. 6.—MICROBE DETERMINATIONS in the LAMBETH COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	0·0	8,210	7·0	13,947	7·2	3,737	11·6	1,763
Lambeth Company's supply	0·6	366	6·4	18	7·3	20	11·4	48

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Thames unfiltered water	17·6	2,052	20·4	2,789	18·2	2,132	21·3	1,895
Lambeth Company's supply	17·2	40	20·9	70	18·5	27	21·3	71

Source of Sample.	September.		October.		November.		December.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		d		
Thames unfiltered water -	13·8	1,158	12·5	13,790	5·6	1,789	5·4	6,316	4,965
Lambeth Company's supply -	13·3	26	13·4	15	6·6	21	5·4	202	77

The filtration plant of this Company does not permit of satisfactory samples being taken from separate filters; consequently, all my samples represent the bacterial condition of the water of a general well which receives the product of all the filter beds at the time working.

The above table shows an average over the whole year of 77 microbes per c.c., but the filtered water contained in January and December an abnormal number of organisms; omitting these two samples, the average number sinks to 36, which is very satisfactory. With regard to the two abnormal samples, I have to say that the number of filters working into the general well is 10, but one at least is always undergoing the process of cleaning. The January sample was collected on the 9th, and one of the filters had been cleaned on the 2nd, and put to work again on the 3rd. The December sample was collected on the 7th, the very day on which one of the filters had been restarted after cleaning.

New River Company.

Amount of storage - - - - - -	4·8 days.
Average thickness of sand on filters - - -	1·8 foot.
Average rate of filtration per square foot per hour -	2·3 gallons.
Maximum percentage of microbes removed - -	99·9
Minimum percentage of microbes removed - - -	97·39
Average percentage of microbes removed - -	98·89

Table No. 7.—Microbe Determinations in the New River Company's Water.

Source of Sample.	January.		February.		March.		April.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
New River unfiltered water -	4·0	31,421	5·0	1,842	7·6	500	12·7	763
New River Company's supply	3·1	30	6·0	32	7·0	12	12·4	6

Source of Sample.	May.		June.		July.		August.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
New River unfiltered water -	15·8	1,973	15·8	2,079	17·0	3,934	20·0	1,303
New River Company's supply	17·2	12	18·4	35	17·5	37	19·3	34

Source of Sample.	September.		October.		November.		December.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
	°		°		°		°		
New River unfiltered water -	11·3	1,053	11·7	2,276	5·6	2,131	5·4	3,403	2,867
New River Company's supply	12·6	16	12·7	30	5·5	23	5·7	22	24

This table shows an excellent record. Throughout the year, there is not a single sample which approaches nearer the limit of 100 microbes per c.c. than 37. In January this Company reduced the number of microbes from 31,421 in the unfiltered water to 30 per c.c. in the filtered water as pumped into the supply mains. Only one microbe in a thousand survived the operation of filtration.

East London Company.

Amount of storage	15·1 days.
Average thickness of sand on filters	2·0 feet.
Average rate of filtration per square foot per hour	1·3 gallon.
Maximum percentage of microbes removed	99·87
Minimum percentage of microbes removed	83·90
Average percentage of microbes removed	97·63

TABLE 8.—MICROBE DETERMINATIONS in EAST LONDON COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Lea at East London Co's Intake.	2·0	56,150	4·2	6,263	7·7	2,350	12·5	2,579
East London:								
No. 1 Essex Well	—	—	4·8	64	7·3	18	12·0	44
No. 2 Essex Well	—	—	—	—	—	—	12·3	56
No. 11 Filter	1·1	92	4·3	24	6·8	22	—	—
No. 12 Filter	2·0	60	4·6	12	6·8	40	—	—

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
	°		°		°		°	
Lea at East London Co's Intake.	17·3	3,145	19·7	4,184	18·2	8,816	21·2	6,658
East London:								
No. 1 Essex Well	16·5	70	18·3	61	17·8	38	—	—
No. 2 Essex Well	—	—	—	—	—	—	—	—
No. 11 Filter	—	—	19·7	35	18·0	110	19·4	210
No. 12 Filter	—	—	17·8	21	18·2	49	19·8	113

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c	Temp. C.	Microbes per c.c.	
	°		°		°		°		
Lea at East London Co's Intake.	12·0	3,658	11·8	5,368	5·9	8,026	5·5	11,842	9,920
East London:									
No. 1 Essex Well	13·6	29	12·4	58	6·0	15	5·5	94	49
No. 2 Essex Well	—	—	—	—	—	—	—	—	56
No. 11 Filter	—	—	—	—	5·8	16	—	—	73
No. 12 Filter	—	—	—	—	5·8	10	—	—	44

The plant of this Company at Lea Bridge admits of samples being taken from two separate filters in addition to two general wells. The bacterial condition of the water in the general wells was invariably satisfactory, but the two separate filters yielded, on three occasions, water containing an abnormal number of microbes.

Thus, filter No. 11 gave on July 24th 110 microbes per c.c. I am unable to account for this somewhat high number, as this filter had been at work for 21 days after cleaning and restarting. The next abnormal sample from this filter was collected on August 9th, but there had been no intermediate cleaning since the taking of the July sample. For no obvious reason, therefore, this filter seems to have been working unsatisfactorily in the months of July and August. The remaining sample, which contained a somewhat high number of microbes per c.c., was, as the above table shows, collected from No. 12 filter on the 9th of August, but it had been in continuous work since the 30th of June, and was not cleaned until the 17th of August. All other samples taken from this filter during the year were very satisfactory. Omitting the three abnormal samples just mentioned, the general average of microbes per c.c. in this Company's water throughout the year was 43, with a maximum of 94 and a minimum of 10. When it is considered that the East London Company starts with a very inferior raw material, it is satisfactory to find that, with very few exceptions, it has been able to deliver water of a high degree of bacterial purity.

Kent Company.

This Company supplies only deep-well water, which is neither stored nor filtered, but is delivered in a clear and bright condition to consumers as it is pumped from the wells.

In January, this water contained only 2 microbes per c.c. and in February it was absolutely sterile. There can be little doubt that the water, as it issues from the chalk in the boreholes and adits of the wells, is invariably absolutely sterile. The small number of microbes generally met with is, in all probability, contracted from the pumping machinery. The maximum number (48) was found in June, whilst the average, extending over the whole year, amounted to no more than 13, as is seen from the following table.

Table 9.—Microbe Determinations in Kent Company's Water.

Source of Sample.	January.		February.		March.		April.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Kent Company's supply -	° 11·5	2	° 11·4	0	° 11·4	4	° 11·3	6

Source of Sample.	May.		June.		July.		August.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Kent Company's supply -	° 11·5	4	° 11·2	48	° 11·3	3	° 11·3	16

Source of Sample.	September.		October.		November.		December.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Kent Company's supply -	° 11·5	9	° 10·3	20	° 11·2	13	° 11·5	30	13

These bacteriological investigations have now been continued for 20 months; and they are being supplemented by an extensive series of experiments upon the conditions necessary for effective microbial filtration. Until these experiments are

completed, I refrain from drawing any definite conclusions from the results contained in the preceding tables. Nevertheless I may be permitted to offer the following remarks :—

Efficient filtration does not seem to depend, essentially, upon the thickness of sand upon the filter beds. Thus, the West Middlesex Company, with a thickness of sand averaging only 2·6 feet, delivered water of even better quality than that supplied by the Chelsea Company; although the thickness of sand upon the filters of the latter Company averages nearly double that employed by the former; whilst the New River Company, with a still thinner stratum of sand, contrived to deliver throughout the year, water of a high degree of bacterial purity. A regular rate of filtration throughout the 24 hours is probably of much more importance than thickness of the filtering medium.

A moderate rate of filtration is no doubt conducive to efficiency; but it is remarkable, that the New River Company works its filters at a higher rate than that employed by any of the other Companies except the Lambeth, and yet stands at the head of the filtering Companies as regards bacterial purity.

The conditions necessary for securing efficient bacterial filtration at all times, appear to be the following: A moderate and uniform rate throughout the 24 hours. The rate given by the various Companies is an average rate throughout the 24 hours, and the maximum rate, which is of very great importance, appears to be unknown. It is evident, however, that without adequate storage for filtered water, the rate during the day, must as a rule, far exceed that during the night. Extensive experiments have been made in Germany under the direction of Professor Koch, and these experiments have led to the conclusion that to secure satisfactory bacterial purity, the *maximum* rate should not exceed 4″, or 2·1 gallons per hour, per square foot of filter surface.

The bacterial efficiency of sand filtration depends also, to a very large extent, upon the formation of a thin film upon the surface of the sand, derived from subsidence of suspended particles in the raw water supplied to the filters. This film forms a nidus for, and becomes thickly populated with, microbes which, in all probability, aid materially in the purification of the water passing through the filter. This film should therefore be removed as seldom as possible, consistent with the passage of sufficient water through the filter. New filters and thoroughly washed filters are very ineffective for a considerable time, and it has been suggested by Dr. Koch that, after the scraping of the filter, the effluent water should not be admitted into the general supply, before a bacterioscopic examination has demonstrated that the number of microbes has been reduced below 100 per c.c. However desirable this may be, I fear the suggestion is scarcely capable of being carried out in practice, on account of the length of time which must elapse between the taking of the sample for bacterioscopic examination and the counting of the microbes. In fact, the incubation requires at least 48 hours and frequently double this time. It appears to me, therefore, that it would be a more practical proceeding to ascertain by direct experiments the length of time required to bring a scraped or washed filter into an efficient condition.

The following would, in my opinion, be a suitable mode of passing a filter through the scraping and restarting process: when the film of impervious matter has been sufficiently removed from the surface of the sand, the filter should be shut off from all connexion with the general supply of filtered water, except so much as is required for the performance of the next operation, which should consist in the filling of the interstices with filtered water supplied from below. This water should be introduced, until it stands an inch or two above the surface of the sand. The connexion between the filter and the general well of filtered water being now completely cut off, raw water from the river or storage reservoir should be run upon the filter until it stands at the normal level. Unless this water is sufficiently turbid to form a good filtering sediment on the surface of the sand, it should be mixed, as it runs upon the filter, with such an amount of lime water as will supply about 3 grains of lime per gallon. An equivalent quantity of alum may be used instead of the lime. The water, so introduced, should be allowed to remain quiescent until it has deposited upon the sand nearly the whole of the suspended matter.

The communication between the renovated filter and the supply well may now be re-established; but only in such a manner as to allow about one tenth of the usual volume of water to pass through the filter. After the lapse of a sufficient length of time, to be determined once for all by experiment, this rate should be gradually increased up to 4 inches per hour, which should never be exceeded.

It is very desirable that storage, for at least 24 hours supply of filtered water, should be provided, and under such conditions, that the rate of filtration may be kept, as nearly as possible, uniform throughout the 24 hours.

In winter, great care should be taken to keep a sufficient depth of water upon the filters to prevent the possibility of freezing in the interstices of the sand; otherwise, as has been found in practice, a portion only of the total area of the filter will remain open to the passage of water and, consequently, the rate through this portion of the area will be so much accelerated as to prevent efficient purification.

I am, &c.
E. FRANKLAND.

The Registrar General, &c., &c.
Somerset House, W.C.

Table A.

Temperature (in Centigrade degrees) of the Metropolitan Waters, as delivered from the different Companies' Mains.

	Companies or Local Authorities.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	Thames.	°	°	°	°	°	°	°	°	°	°	°	°	°
	(Unfiltered Water)	0·0	7·0	7·0	11·6	17·6	20·4	18·2	21·3	13·8	12·5	5·6	5·4	11·7
	Chelsea - - -	2·3	5·4	5·7	10·8	15·4	18·7	18·7	19·7	14·3	13·4	8·7	5·7	11·6
	West Middlesex -	2·1	5·0	6·3	10·3	14·1	16·2	17·5	18·5	12·7	12·3	7·5	6·3	10·7
	Southwark - -	2·3	6·7	6·7	11·2	17·3	19·7	21·5	21·7	14·2	14·2	7·4	6·8	12·5
	Grand Junction -	2·7	5·8	6·3	11·2	16·8	18·4	19·8	21·6	15·0	14·3	8·6	6·4	12·2
	Lambeth - - -	2·3	5·7	5·8	11·1	16·9	19·3	19·4	20·2	13·5	13·4	7·6	5·3	11·7
	Lea.													
	(Unfiltered Water)	4·0	5·0	7·6	12·7	17·2	15·8	17·0	20·0	11·3	11·7	5·6	5·4	11·0
	New River - -	3·4	6·0	6·6	11·9	16·7	18·7	20·2	19·6	13·6	13·7	6·7	5·7	11·1
	(Unfiltered Water)	2·0	4·2	7·7	12·5	17·3	19·7	18·2	21·2	12·0	11·8	5·9	5·5	11·5
	East London - -	3·0	5·8	7·0	11·1	16·3	19·0	19·8	19·8	14·3	13·8	8·3	7·2	12·1
	Deep Wells.													
	Kent - - - -	11·0	11·3	11·5	11·4	11·5	13·1	11·4	13·0	12·3	11·4	11·2	11·3	11·7

Table B.

Weight of Solid Matters in 100,000 parts of the Waters.

	Companies or Local Authorities.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	Thames.													
	(Unfiltered Water)	33·52	34·64	31·80	27·72	27·60	26·92	26·60	25·20	25·68	27·00	28·60	32·60	28·99
	Chelsea - - -	34·06	32·64	31·96	28·34	25·00	25·80	24·98	23·34	23·54	24·70	26·70	29·14	27·52
	West Middlesex -	33·38	33·04	20·64	27·48	24·90	25·70	24·20	22·86	23·44	25·90	27·40	30·20	27·43
	Southwark - -	31·22	33·56	29·36	27·34	25·94	25·20	24·50	26·10	24·40	26·94	28·34	30·80	27·81
	Grand Junction -	33·40	33·44	30·80	26·74	26·72	27·04	25·78	24·24	24·70	26·24	27·80	29·66	28·05
	Lambeth - - -	32·82	32·80	27·80	26·92	26·94	26·44	25·74	24·44	24·74	26·90	28·12	30·48	27·85
	Lea.													
	(Unfiltered Water)	33·36	35·44	30·64	28·68	30·96	32·84	31·90	28·20	31·20	33·40	32·60	34·96	32·02
	New River - -	33·52	33·74	32·74	27·76	27·64	29·50	28·10	27·06	28·74	29·70	30·80	33·00	30·19
	(Unfiltered Water)	38·68	40·44	34·48	30·60	29·92	28·20	28·80	26·28	29·12	35·20	35·28	39·60	33·05
	East London - -	39·76	35·50	38·00	31·70	27·20	28·42	26·86	26·42	25·34	29·34	30·90	35·60	31·25
	Deep Wells.													
	Kent - - -	40·94	41·26	41·48	40·64	38·44	37·60	40·30	38·90	39·36	39·80	37·40	55·84	41·00
Outer Circle.	Colne Valley - -	17·06	21·48	20·16	19·94	17·34	18·20	16·60	16·80	16·10	16·80	17·00	17·30	17·90
	Tottenham - -	41·44	40·74	41·14	41·24	41·60	41·40	37·80	41·60	41·14	—	29·88	41·40	39·94
	East London - -	—	28·64	28·94	38·02	38·04	38·58	39·04	28·90	38·62	29·24	29·30	28·60	33·27

Table C.

Organic Carbon in 100,000 parts of the Waters.

	Companies or Local Authorities.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	Thames.													
	(Unfiltered Water)	·143	·502	·162	·153	·152	·234	·228	·196	·177	·334	·171	·195	·221
	Chelsea - - -	·178	·272	·227	·118	·115	·120	·117	·114	·100	·080	·144	·150	·145
	West Middlesex -	·129	·319	·319	·102	·109	·130	·110	·124	·099	·113	·137	·158	·154
	Southwark - -	·166	·308	·365	·091	·120	·134	·121	·129	·097	·159	·130	·171	·166
	Grand Junction -	·131	·363	·308	·085	·119	·129	·122	·124	·088	·160	·129	·170	·161
	Lambeth - - -	·234	·355	·369	·127	·122	·142	·099	·122	·101	·163	·141	·164	·178
	Lea.													
	(Unfiltered Water)	·115	·224	·081	·090	·074	·102	·097	·090	·088	·096	·069	·076	·102
	New River - -	·077	·085	·176	·063	·061	·066	·034	·058	·049	·061	·050	·100	·073
	(Unfiltered Water)	·237	·260	·111	·137	·071	·209	·153	·136	·124	·198	·142	·218	·166
	East London - -	·148	·300	·206	·105	·087	·098	·097	·077	·099	·157	·112	·153	·137
	Deep Wells.													
	Kent - - -	·036	·030	·017	·029	·042	·023	·036	·042	·027	·021	·034	·070	·034
Outer Circle.	Colne Valley - -	·102	·127	·111	·094	·068	·108	·072	·089	·089	·060	·073	·077	·089
	Tottenham - -	·068	·068	·069	·051	·062	·068	·061	·041	·039	—	·085	·049	·060
	East London - -	—	·193	·071	·051	·049	·082	·083	·043	·083	·083	·070	·079	·081

TABLE D.

ORGANIC NITROGEN in 100,000 parts of the WATERS.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	·033	·084	·040	·028	·032	·042	·039	·031	·030	·053	·041	·029	·040
	Chelsea	·030	·041	·032	·026	·013	·017	·020	·025	·018	·017	·014	·017	·023
	West Middlesex	·027	·042	·051	·017	·013	·015	·015	·015	·019	·014	·016	·017	·022
	Southwark	·042	·064	·043	·019	·022	·014	·021	·025	·022	·031	·018	·015	·028
	Grand Junction	·026	·059	·050	·015	·018	·017	·025	·034	·012	·022	·019	·019	·026
	Lambeth	·039	·058	·060	·014	·018	·019	·014	·017	·015	·024	·020	·017	·026
	LEA.													
	(Unfiltered Water)	·032	·033	·021	·027	·023	·022	·019	·025	·024	·019	·019	·012	·023
	New River	·018	·021	·033	·009	·008	·009	·009	·007	·008	·008	·010	·012	·013
	(Unfiltered Water)	·042	·051	·031	·032	·033	·048	·024	·024	·033	·039	·030	·037	·035
	East London	·030	·037	·046	·015	·017	·012	·018	·012	·014	·024	·017	·023	·022
	DEEP WELLS.													
	Kent	·017	·008	·007	·004	·005	·005	·007	·006	·007	·007	·004	·010	·007
Outer Circle.	Colne Valley	·023	·017	·022	·013	·018	·020	·015	·019	·019	·018	·015	·012	·018
	Tottenham	·027	·018	·016	·010	·009	·009	·016	·012	·012	—	·016	·017	·015
	East London	—	·024	·011	·011	·016	·015	·015	·014	·020	·017	·012	·011	·015

TABLE E.

PROPORTIONAL AMOUNT of ORGANIC ELEMENTS, that in the KENT COMPANY'S WATER during the Nine Years ending December 1876 being taken as 1.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	3·0	9·9	3·4	3·1	3·1	4·7	4·5	3·8	3·5	6·6	3·6	3·8	4·4
	Chelsea	3·5	5·3	4·4	2·4	2·2	2·3	2·3	2·4	2·0	1·6	2·7	2·8	2·8
	West Middlesex	2·6	6·1	6·3	2·0	2·1	2·5	2·1	2·4	2·0	2·2	2·6	3·0	3·0
	Southwark	3·5	6·3	7·0	1·9	2·4	2·5	2·4	2·6	2·0	3·2	2·5	3·2	3·3
	Grand Junction	2·7	7·1	6·1	1·7	2·3	2·5	2·5	2·7	1·7	3·1	2·5	3·2	3·2
	Lambeth	4·6	7·0	7·3	2·4	2·4	2·7	1·9	2·4	2·0	3·2	2·7	3·1	3·5
	LEA.													
	(Unfiltered Water)	2·5	4·4	1·7	2·0	1·6	2·1	1·9	1·9	1·9	1·9	1·5	1·5	2·1
	New River	1·6	1·8	3·5	1·2	1·2	1·3	0·7	1·1	1·0	1·2	1·0	1·9	1·5
	(Unfiltered Water)	4·7	5·3	2·4	2·9	1·8	4·4	3·0	2·7	2·6	4·0	2·9	4·3	3·4
	East London	3·0	5·7	4·3	2·0	1·8	1·9	1·9	1·5	1·9	3·1	2·2	3·0	2·7
	DEEP WELLS.													
	Kent	0·9	0·6	0·4	0·6	0·8	0·5	0·7	0·8	0·6	0·5	0·6	1·4	0·7
Outer Circle.	Colne Valley	2·1	2·4	2·3	1·0	1·4	2·2	1·5	1·8	1·8	1·3	1·5	1·5	1·8
	Tottenham	1·6	1·5	1·4	1·0	1·2	1·3	1·3	0·9	0·9	—	1·7	1·1	1·3
	East London	—	3·7	1·4	1·1	1·1	1·6	1·7	1·0	1·7	1·7	1·4	1·5	1·6

TABLE F.

AMMONIA in 100,000 parts of the WATERS.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	·014	·006	·003	·004	·006	·010	·006	·005	·006	·008	·005	·012	·007
	Chelsea	0	0	0	0	0	0	0	0	0	0	0	0	0
	West Middlesex	0	0	0	0	0	0	0	0	0	0	0	0	0
	Southwark	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grand Junction	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lambeth	0	0	0	0	0	0	0	0	0	0	0	0	0
	LEA.													
	(Unfiltered Water)	·016	·006	·002	·003	·002	·004	·005	·003	·003	·004	·004	·005	·005
	New River	0	0	0	0	0	0	0	0	0	0	0	0	0
	(Unfiltered Water)	·090	·024	·003	·005	·006	·040	·008	·004	·005	·012	·006	·016	·018
	East London	0	0	0	0	0	0	0	0	0	0	0	0	0
	DEEP WELLS.													
	Kent	0	0	0	0	0	0	0	0	0	0	0	0	0
Outer Circle.	Colne Valley	·085	·024	·012	·044	·035	·010	·018	·010	·014	·018	·004	0	·023
	Tottenham	·055	·064	·060	·074	·064	·052	·045	·040	·056	—	·026	·080	·056
	East London	—	·009	0	0	·050	·066	·068	0	·020	·012	·003	·002	·021

TABLE G.

NITROGEN as NITRATES and NITRITES in 100,000 parts of the WATERS.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	·360	·235	·264	·228	·163	·132	·145	·100	·160	·196	·219	·257	·205
	Chelsea - - -	·303	·261	·259	·243	·170	·155	·143	·132	·132	·165	·184	·270	·201
	West Middlesex -	·327	·255	·241	·226	·160	·153	·140	·124	·149	·197	·208	·266	·204
	Southwark - -	·304	·243	·237	·224	·163	·141	·115	·130	·138	·216	·225	·273	·201
	Grand Junction -	·288	·254	·238	·238	·161	·156	·144	·147	·161	·209	·222	·252	·206
	Lambeth - - -	·267	·257	·337	·232	·193	·184	·149	·159	·159	·224	·236	·264	·222
	LEA.													
	(Unfiltered Water)	·336	·351	·349	·310	·210	·192	·197	·205	·235	·252	·293	·319	·271
	New River - -	·312	·301	·293	·330	·185	·180	·140	·166	·196	·230	·270	·320	·244
	(Unfiltered Water)	·344	·310	·342	·267	·197	·144	·137	·106	·162	·248	·256	·377	·241
	East London - -	·333	·254	·443	·308	·184	·187	·199	·185	·144	·198	·264	·260	·247
	DEEP WELLS.													
	Kent - - -	·447	·503	·526	·451	·478	·507	·532	·441	·476	·446	·517	·772	·508
Outer Circle.	Colne Valley - -	·423	·444	·519	·444	·429	·437	·444	·420	·420	·411	·461	·456	·442
	Tottenham - -	·038	·044	0	trace	trace	trace	0	trace	trace	—	0	·008	·008
	East London - -	—	0	·004	·068	trace	trace	0	0	·024	0	0	trace	·009

TABLE H.

TOTAL combined NITROGEN in 100,000 parts of the WATERS.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	·405	·324	·307	·259	·200	·182	·189	·135	·195	·256	·264	·296	·251
	Chelsea - - -	·333	·302	·291	·269	·183	·172	·163	·157	·150	·182	·198	·287	·224
	West Middlesex -	·354	·297	·292	·243	·173	·168	·155	·139	·168	·211	·224	·283	·226
	Southwark - -	·346	·307	·285	·243	·185	·155	·136	·155	·160	·247	·243	·288	·229
	Grand Junction -	·314	·311	·288	·253	·179	·173	·169	·181	·173	·231	·241	·271	·232
	Lambeth - - -	·306	·315	·397	·246	·211	·203	·163	·176	·174	·248	·256	·281	·248
	LEA.													
	(Unfiltered Water)	·381	·389	·372	·339	·235	·217	·220	·233	·262	·274	·315	·335	·298
	New River - -	·340	·322	·326	·339	·193	·189	·149	·173	·204	·238	·280	·332	·257
	(Unfiltered Water)	·460	·381	·376	·303	·235	·225	·168	·133	·199	·297	·291	·427	·291
	East London - -	·363	·291	·489	·323	·201	·199	·217	·197	·158	·222	·281	·283	·269
	DEEP WELLS.													
	Kent - - -	·464	·511	·533	·455	·483	·512	·539	·447	·483	·453	·521	·782	·515
Outer Circle.	Colne Valley - -	·516	·482	·551	·492	·476	·465	·474	·447	·450	·444	·479	·468	·479
	Tottenham - -	·110	·114	·065	·071	·062	·050	·053	·045	·058	—	·037	·091	·069
	East London - -	—	·031	·015	·079	·057	·069	·071	·014	·045	·027	·015	·013	·040

TABLE I.

CHLORINE in 100,000 parts of the WATERS.

	COMPANIES OR LOCAL AUTHORITIES.	1893. Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	1·8	1·8	1·7	1·6	1·7	1·8	1·7	1·7	1·9	2·0	1·8	2·0	1·8
	Chelsea - - -	1·9	1·8	1·8	1·7	1·7	1·8	1·8	1·7	1·8	1·9	1·9	2·0	1·8
	West Middlesex -	1·9	1·7	1·7	1·7	1·7	1·7	1·8	1·7	1·9	1·9	1·9	2·0	1·8
	Southwark - -	1·8	1·7	1·6	1·7	1·7	1·8	1·8	1·7	1·9	2·0	1·9	2·0	1·8
	Grand Junction -	1·9	1·7	1·7	1·7	1·7	1·8	1·8	1·7	1·8	1·9	1·9	2·0	1·8
	Lambeth - - -	1·9	1·7	1·7	1·7	1·7	1·8	1·8	1·7	1·9	1·9	1·9	2·0	1·8
	LEA.													
	(Unfiltered Water)	1·8	1·7	1·7	1·7	1·7	1·8	1·8	1·7	1·8	1·8	1·7	1·7	1·7
	New River - -	1·8	1·7	1·8	1·8	1·8	1·8	1·8	1·8	1·9	1·8	1·8	1·7	1·8
	(Unfiltered Water)	2·1	1·8	1·9	1·9	1·8	1·9	1·8	1·8	2·0	2·1	2·0	2·1	1·9
	East London - -	2·0	1·8	2·2	2·0	1·8	1·9	1·9	1·9	1·9	2·0	2·0	2·2	2·0
	DEEP WELLS.													
	Kent - - -	2·4	2·4	2·3	2·4	2·3	2·2	2·4	2·2	2·3	2·3	2·1	4·4	2·5
Outer Circle.	Colne Valley - -	2·2	2·2	2·3	2·1	2·2	2·1	2·0	2·1	2·1	2·1	2·1	2·1	2·1
	Tottenham - -	2·9	2·8	2·9	2·9	2·9	3·1	2·9	2·9	3·0	—	2·1	2·8	2·8
	East London - -	—	2·0	2·1	2·5	2·5	2·5	2·5	2·0	2·8	2·0	2·0	2·0	2·3

Table K.

Degrees of Hardness (1 deg. = 1 part of carbonate of lime, or its equivalent,) in 100,000 parts of the Waters.

	Companies or Local Authorities.	1893.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	Thames.													
	(Unfiltered Water)	24·2	20·6	23·6	20·3	19·7	20·3	18·9	18·3	17·7	18·0	20·3	20·9	20·2
	Chelsea	24·2	22·1	21·8	20·6	18·0	19·4	18·9	16·0	16·0	17·6	18·9	19·4	19·4
	West Middlesex	24·2	22·1	21·2	20·3	18·3	19·4	17·7	16·0	15·7	18·0	19·1	20·3	19·4
	Southwark	22·4	22·1	19·4	20·3	19·7	18·9	18·0	17·1	16·6	18·9	20·3	20·6	19·5
	Grand Junction	24·2	22·1	21·2	19·7	19·4	20·3	19·1	16·9	16·6	18·3	20·3	20·3	19·9
	Lambeth	23·6	21·8	17·7	20·3	19·7	19·4	18·8	17·1	16·6	18·9	20·3	20·9	19·6
	Lea.													
	(Unfiltered Water)	24·5	24·5	22·1	20·9	21·8	22·7	20·3	19·4	20·6	24·2	22·7	23·6	22·3
	New River	25·1	23·6	22·4	20·0	19·4	21·2	20·0	18·6	19·1	21·5	22·4	23·0	21·4
	(Unfiltered Water)	27·2	26·9	25·7	21·5	22·1	20·0	20·9	18·6	20·6	24·8	25·1	25·7	23·3
	East London	28·7	24·8	24·8	21·8	19·1	20·0	18·9	17·4	16·6	20·0	21·8	22·7	21·4
	Deep Wells.													
	Kent	30·3	29·4	28·7	29·0	27·5	27·2	28·1	27·2	26·9	26·6	26·6	31·9	28·3
Outer Circle.	Colne Valley	6·7	8·0	9·1	9·6	6·4	7·3	5·6	6·6	5·9	6·6	6·7	6·7	7·1
	Tottenham	24·8	23·0	22·1	22·7	23·3	22·7	22·4	23·3	23·6	—	22·1	23·6	23·1
	East London	—	19·7	18·6	20·6	23·0	20·0	20·0	19·1	20·3	20·0	20·6	20·0	20·2

Table L.

Averages for 1893.

The numbers in the Table relate to 100,000 parts of each Water.

	Companies or Local Authorities.	Temperature in Centigrade Degrees.	Total Solid Matters.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen, as Nitrates and Nitrites.	Total combined Nitrogen.	Chlorine.	Total Hardness.	Proportional Amount of Organic Elements that in the Kent Company's Water during the 9 years ending Dec. 1876 being taken as 1.
		°									
Inner Circle.	Thames.										
	(Unfiltered Water)	11·7	28·99	·221	·040	·007	·205	·251	1·8	20·2	4·4
	Chelsea	11·6	27·52	·145	·023	0	·201	·224	1·8	19·4	2·8
	West Middlesex	10·7	27·43	·154	·022	0	·204	·226	1·8	19·4	3·0
	Southwark	12·5	27·81	·166	·028	0	·201	·229	1·8	19·5	3·3
	Grand Junction	12·2	28·05	·161	·026	0	·206	·232	1·8	19·9	3·2
	Lambeth	11·7	27·85	·178	·026	0	·222	·248	1·8	19·6	3·5
	Lea.										
	(Unfiltered Water)	11·0	32·02	·102	·023	·005	·271	·298	1·7	22·3	2·1
	New River	11·1	30·19	·073	·013	0	·244	·257	1·8	21·4	1·5
	(Unfiltered Water)	11·5	33·05	·166	·035	·018	·241	·291	1·9	23·3	3·4
	East London	12·1	31·25	·137	·022	0	·247	·269	2·0	21·4	2·7
	Deep Wells.										
	Kent	11·7	41·00	·034	·007	0	·508	·515	2·5	28·3	0·7
Outer Circle.	Colne Valley	—	17·90	·089	·018	·023	·442	·479	2·1	7·1	1·8
	Tottenham	—	39·94	·060	·015	·056	·008	·069	2·8	23·1	1·3
	East London	—	33·27	·081	·015	·021	·009	·040	2·3	20·2	1·6

Note.—The numbers in these tables may be converted into grains per imperial gallon by multiplying them by 7, and then moving the decimal point one place to the left.

Fires in London during the Year 1893.

Captain J. Sexton Simonds, Chief Officer of the Metropolitan Fire Brigade, reported to the London County Council that the number of fires attended during 1893 was 3410, exceeding by 264 the number in the preceding year, and by 997 the average in the ten years 1883–92. According to this report the lives of 160 persons were seriously endangered, and 82 of these were lost. The numbers of lives lost by fires in London in the four preceding years were 44, 61, 61, and 64 respectively.

The staff of the Metropolitan Fire Brigade at the end of the year was distributed at 56 land engine, 4 floating, 50 hose cart, 3 hose and ladder truck, and 180 escape stations. The number of fire engines at these stations was 153, an increase of one upon the number in the previous year; 9 were floating steam engines, 49 land steam engines, and 95 manual engines. The authorised strength of the brigade was 720 of all ranks, including the chief officer, second officer, and the superintendents. The cases of injury occurring in the brigade during the year were 98, against numbers ranging from 142 to 95 in the nine previous years.

Number of **Fires** and of **False Alarms** attended during the Eleven Years 1883–93, and in each Month of 1893.

Years and Months.	Total Calls.	False Alarms and Chimneys.	Fires.				
			Serious	Slight.	Total.	Per-centages.	
						Serious.	Slight.
1883	2630	486	184	1960	2144	8·6	91·4
1884	2806	517	194	2095	2289	8·5	91·5
1885	2851	581	160	2110	2270	7·0	93·0
1886	2853	704	151	1998	2149	7·0	93·0
1887	3059	696	175	2188	2363	7·4	92·6
1888	2693	705	121	1867	1988	6·1	93·9
1889	3131	793	153	2185	2338	6·5	93·5
1890	3546	991	153	2402	2555	6·0	94·0
1891	4164	1272	193	2699	2892	6·7	93·3
1892	4449	1303	177	2969	3146	5·6	94·4
1893	4824	1414	180	3230	3410	5·3	94·7
1893. January	449	118	14	317	331	4·2	95·8
February	302	74	15	213	228	6·6	93·4
March	405	132	12	261	273	4·4	95·6
April	440	139	14	287	301	4·7	95·3
May	431	133	19	279	298	6·4	93·6
June	432	136	16	280	296	5·4	94·6
July	374	118	10	246	256	3·9	96·1
August	485	135	27	323	350	7·7	92·3
September	381	100	21	260	281	7·5	92·5
October	333	96	9	228	237	3·8	96·2
November	373	109	8	256	264	3·0	97·0
December	419	124	15	280	295	5·1	94·9

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